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Wartime Diphtheria Experience in the Royal Canadian Air Force in Relation to the Use of Diphtheria Toxoid*

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ON June 23, 1941, Air Council approved a program which called for the Schick-testing of all personnel on entry into the Royal Canadian Air Force and the immunization of all susceptibles by the administration of two 1-c.c. doses of alum-precipitated diphtheria toxoid at an interval of four weeks (1). This plan remained in effect throughout the war years and is still accepted policy.

This diphtheria immunization program was introduced following a severe outbreak at one large training school at which time it was found that approximately one-half of all enlisted personnel were susceptible to diphtheria as measured by the Schick test (2). This fact and the knowledge that the incidence of diphtheria was high and the opportunity for infection great in the war theatres, firmly established the need for introducing specific preventive measures. Later experience of the Canadian and United States forces in Europe effectively demonstrated the risk of infection and the soundness of the R.C.A.F. decisions (3, 4).

Objective

The R.C.A.F. was the only Armed Service which, during the war, introduced a routine diphtheria immunization program. It was essential, therefore, that the recorded subsequent diphtheria experience should be thoroughly reviewed in

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order to assess the effectiveness of the program and to determine whether the program, if continued, should be modified in any way, such as by the use of three doses of plain toxoid and by the provision for reinforcing doses.

Such a review also presented an opportunity to examine the incidence of diphtheria in the various "Schick" groups and to compare the R.C.A.F. figures with those for other Forces. The R.C.A.F. diphtheria immunization program also provided an opportunity for a comprehensive study of the duration of clinical and Schick immunity after two doses of alum-precipitated diphtheria toxoid (5, 6).

Scope and Method of Study

During the war, the essential details of all cases of diphtheria or suspected diphtheria were reported to Air Force Headquarters and records of all immunization procedures were required to be entered on the medical document envelope. It was thus possible to ascertain for each reported case the result of the Schick test and the subsequent inoculation history.

In conducting this study, the clinical and immunization records of all male personnel for whom a diagnosis of diphtheria or suspected diphtheria was recorded between September 1, 1941, and December 31, 1945, were reviewed in detail and the relevant clinical and immunization data noted on summary cards. The data recorded included: original Schick test, date and result; doses of alum-precipitated toxoid and dates thereof; date and place of onset; laboratory confirmation of diagnosis; treatment; complications; time in hospital and outcome; history of contact.

No case was excluded from the study if there was any reasonable possibility that it might have been diphtheria. In effect, the only exclusions were diphtheria carriers established as such and cases in which a provisional diagnosis of diphtheria was in fact changed in hospital.

For the purposes of comparison with the diphtheria experience of unimmunized groups of comparable age structure, data for the Canadian Army were extracted from official reports (7, 8).

Reliability of Information

All of the cases which are included in the study were regarded as clinical cases of diphtheria by the medical officer or civilian physician concerned and were apparently treated as such though in some instances the treatment records, in overseas cases particularly, were rather sketchy. The most serious defect lay in the inadequacy of the laboratory data. While in most cases a throat and/or a nose swab and/or culture had been done, in only 8 cases was a virulence test done (in three of these the virulence test was negative but the cases were included as "doubtful"). In 15 cases no bacteriological data at all were available, but in view of the recorded clinical data including mention of presence of a membrane or possibly diphtheritic symptoms, none of these cases was discarded.

There is no doubt but that there was great difficulty in establishing a diagnosis of diphtheria in many cases and there may well be an error in defect as well as in excess for this reason. The procedure adopted in this study is, therefore, felt to be quite sound.

Classification of Cases

In view of the lack of laboratory data to confirm the diagnosis in many cases, and the limited clinical data in many others, the cases were divided into three classes and all main tabulations of data were made according thereto.

(a) Certain: Clinical diphtheria of moderate severity, or cases of any degree of severity with adequate clinical and/or laboratory confirmation of diagnosis.
(b) Probable: Cases not falling into (a) or (c) group.
(c) Doubtful: Cases in which the diagnosis of diphtheria was allowed to stand and the patient treated as a case, though confirmatory laboratory data and supporting clinical evidence was not on record.

Findings

A total of 102 recorded cases of diphtheria or suspected diphtheria occurred among male R.C.A.F. personnel during four and one-third years from September 1, 1941, to December 31, 1945. Of this number, 30 cases occurred among personnel stationed in Canada and 72 cases among personnel at all units overseas. At no time did the disease present a problem, either in Canada or overseas, after diphtheria immunization was introduced.

Of these 102 cases, 16 occurred among men who had been posted overseas before the immunization program was in full operation. All but one of these occurred in the United Kingdom. The Schick state of these men was unknown. One death occurred in this group overseas. Of the 86 remaining ("post-program") cases, 28 were designated as class (a), 29 as class (b) and 29 as class (c). Twenty-nine of these cases occurred in Canada and 57 overseas.

Geographic Distribution of Canada Cases

The geographic distribution of the recorded cases of diphtheria in Canada is of note. Of the 29 post-program cases in Canada, 8 occurred in the Halifax area. Only 2 occurred at Manning Depots and the other 19 were scattered across the country. No record of contact with another diagnosed case was noted in any of the Canada cases. In three overseas cases, contact was specifically mentioned.

The relatively favourable experience of the R.C.A.F. in Halifax is of interest because during the war the incidence of disease among the civilian population was high and the opportunities for infection were great (9, 10).

Comparative Incidence—Canada and Overseas

Over the whole period of four and one-third years covered by the study the recorded incidence of diphtheria among R.C.A.F. personnel in Canada was 6.2 per 100,000 men per year. Among R.C.A.F. personnel overseas the rate was six times as great. In the period 1943-45, the overseas rate was ten times the rate for personnel in Canada.

Distribution of Cases by Immunity Status

Of the 86 diphtheria cases which occurred among R.C.A.F. male personnel after having had the Schick test, and toxoid where required, 30 occurred in

Schick-negative persons and 12 in persons who were Schick-sensitive. In the remaining 44 cases, the original Schick test was positive.

Of the 44 cases which occurred among men whose original Schick test had been recorded as positive, 39 had had two doses of toxoid, two had had only one dose, and three had had no toxoid at all. The latter three cases occurred overseas and involved men who had been posted overseas before toxoid had been given and were never followed up. In one case there was a possibility that misinterpretation of the record was responsible. The two cases in men who had had only one dose of toxoid both occurred in Canada; one of these occurred three weeks after the first dose of toxoid, and in the other the onset was two months after the first dose.

Schick Immunity and Diphtheria

Wartime R.C.A.F. studies established some important facts about the duration of immunity in adults.

(a) A few Schick-negative persons (5 per cent) may become Schick-positive after intervals up to two years.

(b) One year after receiving two doses of alum-precipitated diphtheria toxoid about 30 per cent of previously Schick-positive persons are found to be Schick-positive.

(c) The loss of immunity, as reflected by Schick test findings, in persons who have received two doses of alum-precipitated diphtheria toxoid increases progressively with time, but even at 3 to 6 months after two doses of alum-precipitated toxoid almost 10 per cent are Schick-positive.

The observation on the immunity state of Schick-negative persons when re-tested at various intervals of time after the original Schick test is of interest in this study because 30 of the total of 86 recorded cases of diphtheria occurred in persons who were originally Schick-negative. Gibbons has reported a large number of cases of diphtheria among Schick-negatives in his report upon diphtheria in Halifax (9), but noted that the attack rate in the Schick-negative group was only one-tenth of the rate in the unprotected population.

We are not in a position to compare the diphtheria experience among Schick-negative men, or among those who were Schick-positive and received two doses of alum-precipitated diphtheria toxoid, with unprotected men in the same environment. It is of interest, however, that the proportion of total cases which occurred among males who were originally Schick-positive closely approximates the proportion of male Service personnel who were read as Schick-positive on entry (50 per cent) (2).

The available figures, therefore, show that the incidence of diphtheria among personnel who were originally Schick-positive and received toxoid is almost identical with that among Schick-negative persons. This is evidence of the effectiveness of the toxoid, for without it the attack rate in the Schick-positive group would have been many times as great (9).

Intervals after Schick Test or Toxoid

Of the patients who had received two doses of toxoid, two-thirds developed diphtheria one year or more after the second dose. This observation is of interest

in view of the fact that R.C.A.F. studies have shown that one-quarter to one-third of personnel who are Schick-positive and receive two doses of alum-precipitated diphtheria toxoid are again Schick-positive one to two years after the second dose of toxoid (5, 6). It might be pointed out, however, that most personnel were in this category in 1944 and 1945.

Complications and Deaths

On the whole, the cases were mild. This is borne out by the fact that in only 19 cases was there any recorded complication.

During the four and one-third years from September 1, 1941 to December 31, 1945, there were four deaths from diphtheria among male R.C.A.F. personnel. All of these occurred among personnel overseas. In one instance the original Schick test had been negative; in one it had been read as sensitive; in one no test was done; and in the other one the test was probably positive but no toxoid had been given.

There is clearly no doubt but that each of these deaths was due to diphtheria. In addition, one man, missing and subsequently reported a prisoner-of-war (German information), was reported two years later to have died of diphtheria. No written or other clinical evidence of any kind is available in support of this diagnosis. This man was Schick-positive in December, 1941, and had two doses of 1 c.c. each of alum-precipitated diphtheria toxoid one month apart in December, 1941, and January, 1942.

It is significant that all of the deaths, and most of the moderate and severe cases, occurred overseas where the opportunities for exposure to infection were substantially increased.

Diphtheria in Overseas Theatres

Of the 72 cases of diphtheria which occurred among R.C.A.F. personnel overseas during the period September 1941 to December 1945, twenty-one occurred among personnel in theatres outside the United Kingdom. The attack rate among personnel in these latter theatres was many times that for the United Kingdom. This fact reflects the increased risk of infection in these areas—one of the fundamental reasons for the whole program.

Comparative Experience, Canadian Army and R.C.A.F.

It is of interest to compare the recorded diphtheria experience among male R.C.A.F. personnel with available data on Canadian Army personnel. In examining such data it is important to keep in mind the fact that the R.C.A.F. figures are the result of a careful review of clinical case records, in the process of which a few suspected cases and carriers were eliminated. There are still included in the R.C.A.F. figures, however, many cases which are very doubtful, so that the Air Force figures probably still overstate the true diphtheria incidence.

The Canadian Army data which have been used in this study were derived from official reports based on morbidity tabulations and were secured from the Director General of Medical Services for the Canadian Army (7, 8, 11).

The incidence of diphtheria among R.C.A.F. personnel in Canada throughout the years 1941-45 was strikingly lower than that for the Canadian Army. Both

rates improved substantially during the period—the Army from 99 per 100,000 to 22 and the R.C.A.F. from 16 per 100,000 down to 1 per 100,000 per annum.

It is difficult to make a fair comparison of the two Services overseas because of the differences in relative intensity of exposure in the two Forces in the various continental War Theatres. Suffice it to say that diphtheria was a major problem in 1944-45 in the Canadian Army overseas and no significant concern in the R.C.A.F. In these two years the incidence of diphtheria in the Army was 10 to 15 times that in the Air Force. If we limit the comparison to the United Kingdom, the rates for 1944 and 1945 are 28 and 108 for the Canadian Army and 20 and 30 for the R.C.A.F.

Discussion

Alum-precipitated diphtheria toxoid was used in preference to plain toxoid because it meant one less inoculation, an item of considerable importance in a wartime training program. The number of susceptibles found on routine testing remained fairly constant at approximately 50 per cent throughout. There were few undesirable reactions, the chief complaint being a persistent painless lump at the site of injection for several months. On no occasion did the immunization program interfere with the training program.

The R.C.A.F. diphtheria immunization program fully justified itself. In the six months prior to May 1, 1941, a total of 59 cases of diphtheria and one death occurred among R.C.A.F. personnel in Canada. In the four years and four months from September 1941 to December 1945 there were only 30 cases and no deaths in Canada. In every instance the cases were sporadic in character.

The R.C.A.F. experience in Halifax was very favourable. No outbreaks occurred there among personnel awaiting embarkation for overseas despite the fact that the disease was endemic among civilians in that city.

The sporadic cases which did occur involved all Schick-test groups. As observed by others, cases were reported in persons supposedly immunized. There were also cases among those read as "sensitive" who had received no toxoid.

Summary

1. Following an outbreak of diphtheria in 1941, the R.C.A.F. introduced a generalized program of Schick testing and immunization of susceptibles using two doses of alum-precipitated diphtheria toxoid.

2. Approximately 50 per cent of all adult male personnel were found to be susceptible to diphtheria as judged by the Schick test.

3. There were no serious inoculation reactions and it was possible to carry out the program without interfering with training.

4. The diphtheria immunization program in the R.C.A.F. was effective. No outbreaks of diphtheria occurred despite ample opportunity for infection. All cases were sporadic. The total attack rate was low.

5. The incidence of diphtheria among Schick-positive persons who received two doses of alum-precipitated diphtheria toxoid was almost the same as that among those whose original Schick test was negative. This is clear evidence

of the relative efficacy of the use of two doses of alum-precipitated diphtheria toxoid, otherwise the attack rate would have been many times as great among Schick-positive personnel.

6. Additional evidence is presented to show that there is a substantial loss of Schick immunity after one year.

7. The incidence of diphtheria among R.C.A.F. personnel in the United Kingdom was less than half that of Canadian Army personnel.

8. If the risk of diphtheria in the Forces is considered great enough to require a diphtheria immunization program, such a program (two doses of alum-precipitated toxoid, three doses of plain toxoid, or appropriate doses of any combined antigen (TABTD)) should be accompanied by provision for an annual reinforcing dose.

9. Field studies on the possible use of a combined antigen (plain diphtheria toxoid with TABT) are now under way.

10. The R.C.A.F. is continuing its present diphtheria immunization program on the basis of these findings pending the results of studies on the possible use of a combined antigen (TABTD).

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Pre-Marital Health Examinations in Saskatchewan: Problems and Results

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THIS is not an argument for or against the institution of pre-marital health examination legislation. In Saskatchewan, the argument is over. The pre-marital health examination, including a serological test for syphilis, has been a reality since September 1, 1945.

I would like, first of all, to qualify the term pre-marital examination. In most provinces that have such legislation, pre-marital examination means a pre-marital blood test. In Saskatchewan, a pre-marital examination means a health examination, and the examination includes a blood test which is compulsory. It seems to me that the tendency has been to divide and separate the physical examination covered by the health certificate from the blood test. I think you will agree that one cannot be complete without the other. A physical examination, although it may reveal many important facts, will miss the case of latent syphilis, early or late, or asymptomatic neurosyphilis. The blood test, of course, applies to only one disease and, even if negative, would not rule out primary sero-negative syphilis, for one thing, and would not bring to light physical findings which could be present and which could be as important in defending the success of a young couple in marriage as the bringing to light of an unsuspected case of syphilis.

What should be the principle of pre-marital legislation? That is a matter of opinion. In Saskatchewan, the pre-marital health examination is designed to bring to light the following facts: Firstly, that the parties concerned are not mentally defective. Secondly, that they are not suffering from mental illness. (Both terms are defined in the Mental Hygiene Act.) Thirdly, that the parties concerned are not suffering from a communicable disease which is in a communicable state.

If one or more of these facts is brought to light concerning one or both of the parties concerned in a marriage, they cannot be furnished with a marriage health certificate and, unless such a certificate is forthcoming, their marriage is forbidden.

The third point—that is, that no communicable disease is present, in a communicable state—can only be properly decided by a careful physical examination

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and a serological test for syphilis. A health certificate has been required in Saskatchewan since 1933, but it did not, until 1945, include a serological test and, therefore, it was an incomplete document, supporting an incomplete examination in most cases. Some physicians, undoubtedly, insisted on a serological test. The addition of the serological test for syphilis was not designed to prevent the marriage of a syphilitic person, unless such person was in an infectious stage and was planning to marry a non-infected person.

The Act would prevent the marriage of an infectious case of syphilis, until such time as he was non-infectious, either by the simple passage of time or by active treatment. In the event that a syphilitic person was non-infectious, it would bring this fact of his having syphilis to light, so that he could obtain treatment, if the disease was previously unsuspected.

In the event that a marriage health certificate is refused, the marriage cannot take place unless the Minister of Health issues authority to waive such a certificate. In effect, therefore, the marriage either does not take place until the patient has taken sufficient treatment, or until careful assessment of all facts is undertaken and special permission granted.

The pre-marital examination was implemented by a clause in the Marriage Act of Saskatchewan, which since 1933 called for a physical examination prior to marriage, and this clause was amended in 1945 so that the examination called for a blood test to be performed in a laboratory approved by the Minister of Health.

Legislation which has been in effect for fourteen years is not likely at this time to produce many problems. The amendment, of course, has produced some problems and it is my task today to try to give you an idea of what these problems are. First let me point out the various people who will be involved in these problems:

1. The general public.
2. The medical profession, whose duty it is to perform the examination.
3. The clergy and civil authorities concerned with the solemnization of the marriage.
4. The Division of Vital Statistics of the Department of Health, who administer the Marriage Act, which includes the examination clause.
5. The Provincial Laboratory, which performs the majority of the blood tests.
6. The Division of Venereal Disease Control of the Department of Health.
7. The Minister and Deputy Minister, who will have the final word in assessing problem cases.

The problems themselves can be divided into Provincial and Inter-provincial. The majority, of course, will be Provincial problems, as the Act will apply only to marriages taking place within the Province.

I. Provincial Problems

1. The general public, as I have pointed out before, have, for approximately fourteen years, been used to the clause in the Act calling for a physical examination. The principle of a pre-marital examination, therefore, was not new to them. When the amendment requiring a blood test was introduced, although

there was some question by certain religious parties, no exceptions were made in our Act; but it was decided that any individuals who for religious or other reasons did not wish to subject themselves to such examination, would be treated as individual cases, and could apply to the Minister for a waiver of the Health Certificate, and such cases would be decided on their individual merit. No problem has arisen in this regard.

From the general public has come not one word of criticism for this legislation. They have, therefore, not considered the inconvenience of the pre-marital examination to outweigh the benefits they are likely to receive.

A problem for some to decide has been whether the marriage is to proceed when the marriage partner has been found to be infected. The absolute answer to this problem is not known, but I will later give figures to show how many marriages did proceed in spite of the findings of one or more of the marriage partners infected. Those found infected are also faced with the problem not only of follow-up investigation, following a positive blood test, but of taking treatment, if such is found necessary.

2. The professional problem, the problem which the physician has to face, can often be a difficult one, but can be summed up with the question, "Shall I, or shall I not, issue a certificate?" This question comes up particularly in the case which shows repeated suspicious but not definitely positive smears for gonorrhoea, and in the case which shows a positive serological test but gives no history and presents no clinical findings suggestive of syphilis. I consider that the profession in Saskatchewan have accepted this responsibility and have co-operated to the fullest in rendering as good an opinion as possible in difficult cases. The fact that they are taking the matter seriously is borne out by a number of requests for assistance in assessment of cases which are received at the Division of Venereal Disease Control. No "cut and dried" rules can be laid down which will apply in every case of syphilis, and each problem case must be decided on its own merit.

3. The clergy and others empowered to solemnize marriages are faced with the problem of having to refuse to marry the parties concerned if they have no certificate, or official waiver of certificate, to present with the marriage licence. Clergymen find themselves in a difficult position when all plans for the wedding have been made and they are approached to perform the ceremony and find that no certificate has been obtained. They must, of necessity, refuse to perform the marriage until the parties concerned can produce a certificate signed by a physician.

4. The Division of Vital Statistics is responsible for the administration of the Marriage Act. All marriage documents must be forwarded through the district registrars to the Division. These must be checked for completeness, and the health certificate must be scrutinized to insure that the provisions of the Act are being met. They must be listed, so that from time to time the laboratory numbers inscribed thereon may be checked with the laboratory for statistical and follow-up purposes. This appreciably increases the work of this Division, as there were some nine thousand marriages in Saskatchewan in 1946.

5. The Provincial Laboratories have had an increased number of serological tests to perform due to the pre-marital blood test. This increase is shown by the figures for the last three years: in 1944, 75,408; in 1945, 105,353; in 1946, 117,426. The total increase due to the pre-marital serological test legislation has in no way embarrassed the facilities of the Laboratory. Probably the chief problem is that of hurry-up calls. A physician sends in a specimen with the remark that the wedding is scheduled within a day or so. In spite of the fact that the Act states that thirty days are allowed, and that the test must be within thirty days of the marriage, there are always those who, either through ignorance or forgetfulness, come for their blood test at the last minute. The Provincial Laboratory feels that it is its duty to co-operate with the physicians as much as possible, but due to last-minute requests, overtime work and holiday work has been necessary.

The second problem that they are faced with is that of possible false positives or doubtful results. It is not uncommon to have to suggest repeat specimens to physicians where the history of the patient is negative and physical examination has been negative, but a positive report results. Similarly, occasional doubtfuls require confirmation.

Another problem of the Provincial Laboratory has been that of collection of statistics with regard to pre-marital tests. It has been found that physicians do not label the serological test pre-marital, and after a little more than a year of operation it appeared that a special form must be provided for this purpose, in order that pre-marital tests could be differentiated from clinical and routine tests. The Laboratory is also required to check the results of Provincial and other laboratories in order that they can certify such, so that they may be listed as laboratories approved by the Minister, for the purpose of this Act. This tends to increase the work of the Laboratory because, from time to time, parallel series must be run, in order to assess the efficiency of local laboratories. None of these problems have been sufficient to overload the Laboratory staff.

6. The Division of Venereal Disease Control, although not directly concerned with the administration of the Marriage Act, is brought into the picture in many ways. In the first place, the Division must be prepared to assist private practitioners in the assessment of cases which have proven positive, as to whether they are infectious or non-infectious. The consultation work done by the Division has been considerably increased due to these inquiries from the profession.

Secondly, in so far as cases where a waiver of a health certificate seems indicated because of venereal disease, the Division must assess the situation and prepare the case for the Minister's approval. An example of such a case would be where both parties are infected with syphilis and wish to get married. Such a case is no real contra-indication to a marriage taking place, but there is a definite contra-indication to the issuing of a health certificate. Another example would be where one of the parties is infected with syphilis, possibly in an infectious state, and where the girl is already pregnant, and marriage is indicated to prevent illegitimacy.

Thirdly, the Division is brought into the picture in order to promote both

lay and professional education with regard to the test. Prior to the introduction of such legislation, physicians must be circularized explaining their part of the job, and furnishing them with information on venereal disease, particularly with regard to the communicability of syphilis. The greatest single point to be emphasized in professional education is that a positive serological test does not contra-indicate the issuing of a health certificate.

Fourthly, the Division must correlate the statistics produced by the Division of Vital Statistics with the findings of the Provincial Laboratory, so that the worth of pre-marital examinations, including the blood test, may be properly assessed. This requires careful preparation prior to the institution of such legislation. The Division of Vital Statistics must be prepared to produce a list of all marriages which have taken place with the names of the parties concerned, against each of which is the laboratory number of the pre-marital test. The Laboratory, on the other hand, must be able to produce a list of pre-marital tests done, with the name of the individual and the laboratory number. Having these two lists, the Division of Venereal Disease Control can produce figures showing the number of tests done, the number of positives, the number of marriages which did take place with positive tests, the number of marriages which did not take place where a positive test was involved, the number of positive tests which had not previously been reported to the Division as a case of venereal disease, and—the most important figure—the number of new cases of syphilis brought to light as the result of the pre-marital test. To obtain these figures from the outset, the statistical program must be planned in advance.

The method of handling waivers is not complicated, and they are usually handled through the family physician. He is asked to have a letter of application, signed by both parties, submitted to the Division. This letter states that both parties are aware that one or both are infected with syphilis, and that they will remain under treatment or observation as long as the physician considers it necessary. If the waiver of the Health Certificate is considered advisable by the Minister, a letter is then sent which can be attached to the licence, authorizing the clergyman or civil authority to perform the ceremony without the necessity of a health certificate.

II. Inter-Provincial Problems

The second and smaller group of problems are the inter-provincial problems, where one party or possibly both parties concerned in a marriage are being married in the province, but have been living outside the province. If they enter the province in sufficient time before the marriage, no problem is usually presented, but it quite often happens that they enter the province shortly before the marriage. If they have a health certificate not in the prescribed form, they must then obtain a certificate from a Saskatchewan physician, made out in the proper form. This does not commonly occur, as Saskatchewan, so far, is the only province requiring a health certificate. What more commonly happens is that an individual arrives in the province, carrying with him a report of a serological test taken in another province. This problem is easily solved if the name of the laboratory is given. The physician, who completes the health certificate, can

insert the name of the laboratory on Form J (Health Certificate) without making an additional test, provided that it is a laboratory approved by the Minister. All our physicians have been circularized with a list of approved laboratories, and reports from the Provincial Laboratories outside the province are acceptable.

I am informed that, although no definite statistical figures are available at present, the number of inter-provincial marriages is not great. However, with more and more provinces instituting compulsory pre-marital blood tests, it would be advantageous if an exchange of lists of approved laboratories were undertaken, to prevent hardship to those individuals concerned.

Statistics

In so far as the pre-marital blood test is concerned, it would appear to be the job of the Division of Venereal Disease Control to correlate the statistics of the three Divisions, Vital Statistics, Laboratory, and Venereal Disease Control, in order to produce a final and complete picture showing the value, or lack of value, of such procedure.

Statistics compiled on a provincial basis must be viewed with caution. The fact that a marriage does not appear on the books of the province does not mean that a marriage did not take place. The fact that a positive serological test was discovered does not necessarily mean that a case of syphilis was brought to light. If a test was indicative of a syphilitic infection, it may have been previously reported, but the fact that it has not been previously reported does not mean that it was a new case. It may have been unreported and yet have had treatment.

The Saskatchewan Division of Venereal Disease Control has attempted to correlate these findings in our pre-marital examination program, in so far as serological tests are concerned.

One thousand nine hundred and seventy-eight (1,978) names were obtained from the Bureau of Vital Statistics. These 1,978 were partners, men and women concerned in the consecutive marriages reported to the Bureau of Vital Statistics between January 1, 1946 and March 14, 1946. Opposite each name we obtained laboratory numbers, or the name of the laboratory where the serological test was performed. Forty-four of these were performed in other than the Provincial Laboratory and have not been followed up. Of the remainder, 1,934, two were found to be positive. These were followed up by checking against reported cases. Neither of these had been previously reported to the Division. If the same rate was applied to the remainder of the marriages during the year, involving some 18,000 people, it would have meant the bringing to light of about 19 positives.

As well as the positives located from the marriage health certificates, 4 cases of syphilis were located by means of the pre-marital examinations, where waivers of health certificates were asked for on the grounds that one or both parties were infected with syphilis. These had not previously been reported, and represent 3 different marriages. Thus, 4 cases additional to those among the 19 positives were found during 1946, and the marriage protected by bringing them under treatment.

One additional case is known about, where a health certificate was refused; the parties went to another province to be married, returned to Saskatchewan,

and are now under treatment. There undoubtedly were more of these, but until our pre-marital requisition slip was introduced this year, it has not been possible to ascertain the actual number.

After a year of observation of the test, it was noticed that a number of physicians had used the numbers for specimens which were frozen or haemolized en route to the Laboratory. In our series observed during 1946, 2.2 per cent of the laboratory numbers reported with the marriage were so affected. This naturally attaches a 2.2 per cent error to the findings, but the error will be that fewer tests were found positive than should have been found.

Another point of difficulty in the collection of statistics has already been mentioned in that physicians do not label their serological tests "pre-marital." For instance, in the month of April, 1947, 486 serological tests were submitted to the Provincial Laboratory labelled "pre-marital". Our monthly average of people involved in marriage is approximately 1,500. We know, therefore, that a large number were submitted labelled "routine", or not labelled at all. From these 486, one positive was discovered.

The Pre-Marital Serological Test

As a result of our experience in attempting to analyse the result of the pre-marital serological tests during 1946, a survey was carried on during 9 months of 1947, in an effort to determine how many cases of syphilis were discovered by this means. The Provincial Laboratory had, in the meantime, arranged for these tests to be submitted accompanied by a specially marked requisition to distinguish pre-marital serology from other serological specimens. Thus all positive tests were reported to the Division of Venereal Disease Control and were followed up by correspondence with the physician concerned. These results were compiled from the consecutive pre-marital serological tests done in the Provincial Laboratory over a nine-month period. Probably a number of pre-marital tests were submitted not so labelled and would not be included. Some physicians may have been aware of existing infections, of previously treated infections, and may not have labelled them pre-marital. If so, one would expect our percentage of positive findings, if we had all the pre-marital tests, to go up rather than down.

During the nine-month period, May 1, 1947 to January 31, 1948, a total of 11,997 pre-marital tests were performed in the Provincial Laboratories. Of these, 32 (0.27 per cent) were found to be positive. On investigation, 18 proved to be newly discovered cases of syphilis, 7 were cases previously known to have syphilis, and 3 proved to be false positive reactions; information could not be obtained on the remaining 4. The 18 new cases, of course, represent the real accomplishment of pre-marital serological tests. It is possible that the 4 positives, where no information was obtained, would prove to be new cases, and would bring this total to 22. The 18 new cases, however, must be considered as the case-finding result of pre-marital serological tests over a nine-month period in Saskatchewan. Nine of these cases were male and 9 were female. By stage, they were divided as follows: primary 1, secondary 8, latent 8, and tertiary 1.

An indication of the amount of coverage of our series of pre-marital tests is

demonstrated by the fact that during this nine-month period there were 6,148 marriages, which represent 12,296 people. Our 11,997 consecutive serological tests done at the Provincial Laboratories, therefore, cover approximately 98 per cent of all the pre-marital tests performed during that period. From our results, 18 people received information vital to their welfare.

PRE-MARITAL SEROLOGICAL TESTS

Nine-Month Period, May, 1947—January, 1948

Total Pre-marital tests	Total Positives	False Positives	Cases Previously Reported	New Cases Discovered	No further information obtained
11,997	*32* (.27%)	*3.* (.03%)	*7* (.06%)	*18* (.14%)	*4* (.04%)

New Cases By Stage

Primary	Secondary	Latent	Tertiary	Total
1	8	8	1	18

COSTS

No actual figures are available which would determine the exact cost of the pre-marital examination program. Sufficient information is available, however, to make a fairly reasonable estimate of the annual costs of such a program. Administration of this program in Saskatchewan has required no increase in staff and so has entailed merely the cost of correspondence, the cost of mailing, the cost of performing the serological tests in the laboratory, and the cost to the individual in paying his doctor for the examination.

The Provincial Laboratory informs me that the total cost to them is approximately $3,000 per annum. The cost to the individual of the examination, including the serological test, has been set by agreement with the College of Physicians and Surgeons at $5.00.

One might reasonably set the cost, therefore, at approximately $10,300.00 per 1,000 marriages. This rough estimate does not include the cost of the time spent by workers in the various Divisions concerned in the administration of the pre-marital health examination.

SUMMARY

1. In this paper an attempt has been made to present the various problems associated with the pre-marital health examination in Saskatchewan.

2. In 11,997 pre-marital tests performed in the Provincial Laboratory, 32 were found to be positive. Of the 32 positives, on investigation 18 proved to be newly discovered cases of syphilis, 7 were previously known to have syphilis, 3 were considered false positive reactions, and 4 were positives about whom no further information could be obtained.

3. It is estimated that the cost in Saskatchewan of the pre-marital health examination is approximately $10,300 per 1,000 marriages.

ACKNOWLEDGMENT

I would like to acknowledge the assistance of the staff of the Division of Vital Statistics and the Provincial Laboratories in collecting data for this paper and also the patient and loyal help of Mr. C. Goss of the Division of Venereal Disease Control, Department of Public Health of Saskatchewan.

Reorganization of the Health and Welfare Division of the Dominion Bureau of Statistics

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THE purpose of this paper is to provide the members of the Canadian Public Health Association (Vital Statistics Section) with a picture of the functional organization of the Health and Welfare Division, and to outline briefly the extent of services provided by its sections in the field of health and welfare statistics.

The old familiar Division of Vital Statistics was given a new name recently but that does not mean that the same attention is not being given to vital statistics as was the case prior to this reorganization. The Statistics Act of 1918 which established the Dominion Bureau of Statistics provided, in addition to the Census and the collection of statistics on Immigration and Emigration, for the collection of vital statistics as a branch of the Bureau's Division II (Demography).

The Statistics Act, 1918, in section 33, charged the Dominion Bureau of Statistics with compiling of statistics, among other fields, on: population; births, deaths and marriages, and immigration and emigration.

In section 32 of the new Statistics Act, 1948 (11-12 George VI, Chap. 45), we find, among other matters, the following: population; births, deaths, marriages, divorces; epidemiology, morbidity; immigration and emigration; hospitals, mental institutions, tuberculosis institutions, charitable and benevolent institutions.

Thus, while the tabulation of national statistics of births, deaths and marriages is still one of the Division's main functions, a few new duties have been added to those of the old Vital Statistics Branch. In the course of time, vital, institutional and criminal statistics became increasingly interrelated, and closer collaboration between the branches concerned developed accordingly. In recognition of this fact, the three branches were united into a single Division on January 1, 1948, under the title of the "Social Welfare Statistics Division." This was later changed to the more specific name of "Health and Welfare Division."

The new functions under the Statistics Act, 1948, and the new name assigned to the Division are, however, merely the outward signs of the progressive development of recent years. The activities of the three branches, as

[1] *Presented before the Vital Statistics Section of the Canadian Public Health Association at a meeting held in the Board Room, Jackson Building, Ottawa, October 18, 1948.*

reflected in the annual reports prior to 1948, covered essentially the same field as the new organization. It was, therefore, not a matter of setting up a "new" division and then allocating to it new functions, but rather it was a matter of adapting the organization to the existing needs and the demands made upon the Bureau.

To illustrate the process of expansion in the activities of the various units that now form the Sections of the Health and Welfare Division, mention should be made of a few of the highlights, covering these last few years.

As a result of the Dominion-Provincial Conference on Vital Statistics, held in 1944, the Vital Statistics Council for Canada was constituted by Order in Council, P.C. 4851, dated July 31, 1945, "in order to facilitate co-operation between Dominion and Provincial Governments with respect to the use of vital records and statistics and to ensure the creation and maintenance of a system that is adequate to meet increasing demands both for Dominion and Provincial purposes. . . ."

As a consequence of Family Allowances legislation, the transcript system of transmitting vital records by the Provinces to the Bureau was replaced by a microfilm system, and a National Register of Vital records—the National Vital Statistics Index—established.

To enable the Division to deal adequately with an increasing need for medical statistics of all types, the "Technical Medical Advisory Committee on Vital Statistics to the Dominion Statistician" was constituted on December 6, 1945, to "ensure that the medical statistical requirements of the Government of Canada are fully met and kept in line with the rapid advances in medical techniques used in the treatment and prevention of disease."

Problems concerning health insurance have been under study since the Advisory Committee on Health Insurance began its work in 1942, and questions connected with industrial health have been receiving increasing attention. In general, co-operation with the Department of National Health and Welfare has been expanding in recent years, as well as collaboration with the various national health organizations in Canada.

In the field of international vital and health statistics, a major task is just being completed—the Sixth Decennial Revision of the International List of Causes of Death, on which Dr. Wyllie, Chairman of the Vital Statistics Section's Committee on Nomenclature and Nosology, has given an excellent and very comprehensive report. It is worthy of mention, in connection with the co-operation with the World Health Organization, that the International Revision Conference held in Paris in April, 1948, drew up a Convention recommending a comprehensive program for the expansion and improvement of international statistics in this field—a rather ambitious program, but one of great interest to us here in Canada, and one that will closely tie in with many of the projects we are pursuing at the present time.

Another agency, in whose work the Director and some members of the staff actively participate, is the Population Commission of the United Nations. The work of the Statistical Commission of the Inter-American Committee on Social Security has been supported, and close contact has always been main-

tained with agencies in Great Britain and the United States in the field of vital and health statistics.

The following outline reviews very briefly the activities of the various Sections and Units of the Division, as summarized in the Organization Chart (see Chart 1).

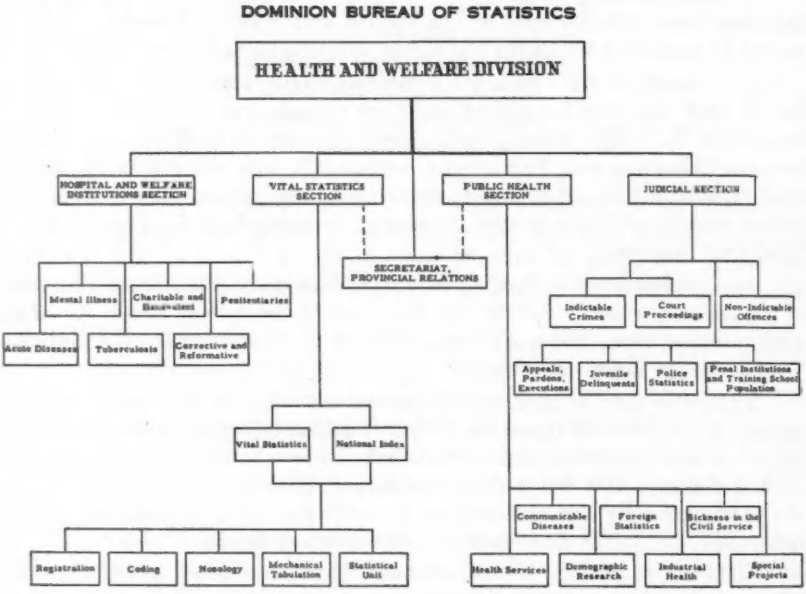

CHART 1

(1) HOSPITAL AND WELFARE INSTITUTIONS SECTION

(*a*) The *Acute Diseases Unit* collects statistics from 600 public hospitals, 250 private hospitals, 80 Dominion hospitals, and 46 hospitals for incurables. This covers information of a general nature as to ownership, classification, bed capacity, facilities, services, medical and other hospital staffs, schools of nursing, clinics, special units, out-patient services, etc. Here statistics on the movement of hospital population (admissions and discharges), financial returns, revenue, expenditure, assets and liabilities, are compiled.

From this mass of data we learn, for example, that, in 1946, 394 fewer student nurses were enrolled in hospitals, and 135 fewer nurses graduated than in the preceding year. We further learn that there are 4.3 hospital beds in Canada per thousand of the general population; that on any given day in public hospitals alone there are somewhere around 40,000 patients, and that, on the average, they stay for 11 days in hospital. These are but a few illustrations of the type of information contained in the Annual Report of Hospitals issued by this Section. The Unit also publishes a List and a Directory

of Hospitals, together with relevant instructions aimed at securing uniform and complete returns.

(*b*) The *Mental Illness Unit* publishes corresponding data respecting 60 mental and neurological hospitals. As an illustration, from the Annual Report of Mental Institutions we note that not less than 50,000 people can be found on any given day in mental institutions in this country, which, incidentally, is some 5,000 more than the normal bed capacity. Also published is a set of instructions on reporting procedures, including a Handbook on the Classification of Mental Disorders.

(*c*) The *Tuberculosis Unit* compiles similar data for 84 tuberculosis clinics, 46 tuberculosis units, and 87 sanatoria. Furthermore, admission and discharge cards transmitted to this unit by sanatoria and clinics enable the unit to maintain a perpetual registry of inmates. In addition, returns of mass surveys are also collected, compiled and published in the annual report of this unit. From the Annual Tuberculosis Report we learn, for instance, that the average length of stay in these tuberculous institutions was about 280 days, as compared with 11 days for patients in acute disease hospitals. We further note, for example, that among persons employed in various industries and trades, the highest rate of admissions comes from those working in "personal service," the lowest from the group in "trade, finance and insurance."

(*d*) The *Charitable and Benevolent Unit* collects statistics on 434 charitable institutions and child and adult welfare agencies. Publications of this unit include information on inmate population; cross-classification of inmates by age, sex, economic, mental and physical condition; staff, and finances. The quinquennial census of these institutions was interrupted by the last war but is now being resumed.

(*e*) On *Corrective and Reformative and Industrial Training Schools*, a Report is issued in collaboration with the Census Division, giving data on inmate population, personnel and finances.

(*f*) *Dominion Penitentiaries.* Detailed statistics are compiled on the basis of admission, transfer, parole and discharge cards relating to each individual in the 8 penitentiaries in Canada, and are published as an appendix to the Annual Report of the Superintendent of Penitentiaries.

(2) Judicial Section

(*a*) *Indictable Crimes and Non-indictable Offences.* Criminal Statistics have been collected since 1876 on a Dominion-wide basis. Returns are obtained directly from the court officials in each Judicial District—in all, 1,577 court officials in 150 Judicial Districts reported to the Dominion Bureau of Statistics in 1947. These returns serve as the basis for the compilation of the national statistics and supply the answers to the many enquiries that come to the Section from various Government agencies on all levels, from private institutions, universities, churches, the press, and from individuals, as well as from other countries. The Annual Report of Statistics of Criminal and Other Offences provides much of the material that is required by all agencies, governmental or private, concerned with the prevention of crime.

The report reveals, for instance, a steady rise in indictable offences over the last few years. It also shows that with the lifting of gas, tire and car restrictions after the war the infractions of traffic regulations mounted, and that in 1946 "reckless driving" and "driving a car while drunk" together increased by 85 per cent over the preceding year. The report also shows that almost all stolen cars were recovered—so were most of the bicycles—while of other stolen articles (which incidentally were valued at over $4,000,000), less than half were recovered by the police.

(*b*) Statistics of *Court Proceedings*, and

(*c*) *Appeals, Pardons and Executions* are included in the reports on indictable crimes and non-indictable offences.

(*d*) *Juvenile Delinquency* statistics have been compiled separately from adult offences since 1922. Reports of juvenile offences were received, in 1947, from 136 Judicial Districts, while the remaining 15 Districts reported no offenders. In all, almost 8,300 children's cases were disposed of during that year. The statistics on these cases are classified by Provinces and Judicial Districts, as well as by age, sex, birthplace, occupation, residence, education, status, and by disposition of the case.

Juvenile delinquency has always been a matter of grave national concern. The results of the manifold efforts to curb this evil can be measured by these statistics which show that, while the problem is still serious, there has been, generally speaking, a steady decline in delinquency during the last few years.

The annual report on juvenile delinquents forms a chapter of the aforementioned report and is also made available as a separate reprint.

(*e*) *Police Statistics* are submitted by the chief constables in the incorporated cities, towns and villages of a population of 4,000 and over, and by Provincial police, the R.C.M.P. (in provinces where they act as Provincial police), and by the Departments of Investigation of the Canadian National Railways and Canadian Pacific Railways. These statistics provide data on the strength of the police force; offences known to the police; arrests; summonses; prosecutions; the loss, value and recovery of stolen articles; accidents; missing persons reported and found, as well as data relating to the photographing and fingerprinting Divisions of Police Identification Departments.

(*f*) *Penal Institutions and Training School Population.* This unit completes, for the purpose of this Section, the material prepared by the Hospital and Welfare Institutions Section by compiling the information relating to 138 gaols and prisons in Canada.

(3) Public Health Section

(*a*) The *Health Services Unit* was originally set up as a record and research unit in co-operation with the Department of National Health and Welfare, following a recommendation of the Dominion Council of Health. This unit carries out a continuous review of health services and medical care services with special reference to their cost. Some of the work of this unit is summarized in the Health Reference Book, the forthcoming edition of which will

contain such chapters as: Health Planning Administration; Health Personnel; Statistics and Research; General Public Health; Venereal Disease; Crippled Children; Tuberculosis; Mental Health; Cancer; General Hospital Care and Public Medical Care.

(*b*) The *Special Projects Unit* is mainly concerned with the analytical study of population problems in Canada, and in this connection participates in the work of international bodies in this field, such as the Population Commission of the Economic and Social Council of the United Nations. Several special studies have been issued as a part of an analytical series of reports. In collaboration with the Census Division a Report on Census and Estimated Population shows, by sex and age group, the movement of population for the country as a whole and for each Province, while the Life Tables for Canada and Regions reveals how favourably expectation of life in this country compares with that of other countries.

Other special projects are undertaken as the need and the occasion arises as, for instance, the study of cancer *mortality* in Canada and the Provinces, in which the various aspects of this second leading cause of death are analysed.

(*c*) The *Foreign Statistics Unit* collects and co-ordinates from various foreign sources and international publications (as United Nations Reports, etc.), vital statistics for some 60 countries. There is always a great demand for information of this nature for purposes of comparing certain aspects of the health situation in Canada with that in other countries.

(*d*) The *Communicable Diseases Unit.* This unit was set up as a result of an agreement with the Department of National Health and Welfare. It collects and compiles the reports on the incidence of notifiable diseases in Canada, and issues a weekly report.

(*e*) *Sickness in the Civil Service.* The work of this unit, which was interrupted by war conditions, has been resumed. This represents a continuation of the work initiated by Dr. F. S. Burke prior to the war. The Annual Reports presented the most comprehensive survey on morbidity that was available in this country.

(*f*) The *Industrial Health Unit* carries out statistical studies on various aspects of industrial health, in collaboration with other interested Government departments, particularly the Department of National Health and Welfare, and the Department of Labour. At the present time a study of pension and sickness-benefit plans in Canadian industries is in progress.

There remains the section with which all members of the Vital Statistics Section of the Canadian Public Health Association are already familiar, that is:

(4) Vital Statistics Section

The publications of this Section are well known to the C.P.H.A. members: the Annual Report on Vital Statistics; the reprints of the Vital Statistics Chapter in the Canada Year Book and the reports leading up to these—the

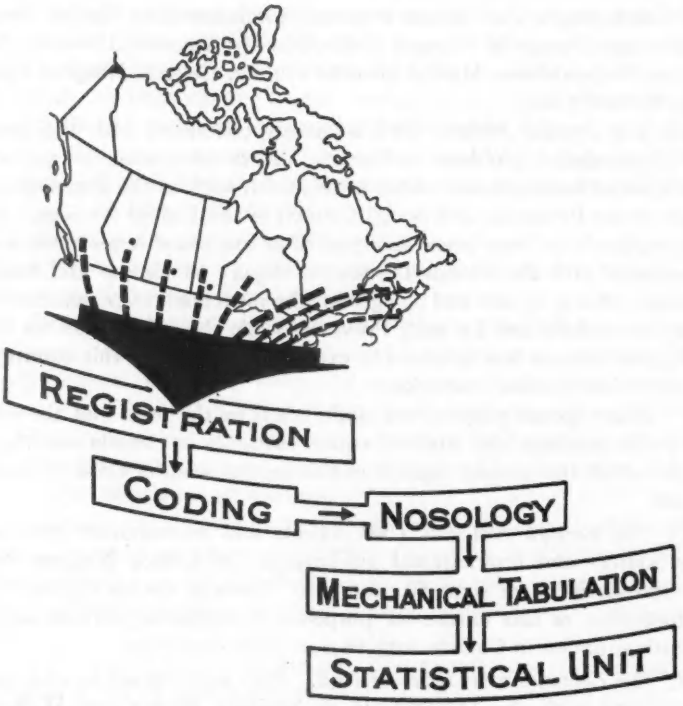

CHART 2

Vital Statistics Section, Health and Welfare Division, Dominion Bureau of Statistics

quarterly Report on Births, Deaths and Marriages, and the Preliminary Annual Reports on Vital Statistics, covering tentative and final figures.

This Section also publishes the Vital Statistics Handbook; the Physician's Pocket Reference; the Manual of the Classification of Causes of Stillbirth for Canada; Reports on Violent Deaths in Canada; Annual Report on Divorces; special reports such as Maternal and Infant Mortality in Canada and, in collaboration with the Census Division and the Public Health Section, a special series of analytical reports.

A summary of the activities of each unit of this Section follows.

(*a*) The ***Registration Unit*** is responsible for all microfilm copies of registrations of births, stillbirths, marriages and deaths received from the Provinces. This work involves indexing the contents of the microfilm rolls, and their distribution to the processing units of the Section. On completion of the statistical processing, this unit is responsible for film splicing, the return of film copies to the Provinces, and finally for the accounting in connection with the provincial records.

(*b*) The ***Coding Unit***, as the name implies, is responsible for the assignment of codes to all information used for statistical tabulation of births, stillbirths, marriages and deaths, with the exception of the information contained

in the medical certificate of the cause of death or stillbirth, which is the special responsibility of the Nosology Unit.

(*c*) *Nosology Unit.* This unit is responsible for coding all information contained in the Medical Certificate of Death or Stillbirth. Cause-of-death codes are assigned in accordance with the International List of Causes of Death.

(*d*) The *Mechanical Tabulation Unit*, in addition to processing punch cards and the mechanical tabulation of the provincial and national tabulations, processes the vital records required for the National Vital Statistics Index, as well as other tabulations required in connection with projects of the Public Health Section.

(*e*) The *Statistical Unit* co-ordinates the tabulations on vital statistics and prepares the annual, quarterly and monthly reports for the Dominion and the Provinces. It is in this unit that the numerous requests for vital statistics data are filled, and the material required for the United Nations and other agencies and individuals prepared.

(5) The Secretariat—Provincial Relations Unit

This unit provides the administrative services for the Vital Statistics and Public Health Sections. This includes routine correspondence, processing of special reports, filing and, as a major portion of its job, the secretarial work for Dominion-Provincial Conferences and meetings of the Vital Statistics Council for Canada.

As already mentioned, the present organization is the result of increasing demands for vital and health statistics. It can be said of the whole Division that the units of the sections co-operate closely in all major projects such as work in connection with the new Model Vital Statistics Act; the International Statistical Classification of Diseases, Injuries, and Causes of Death; the planning of surveys and special studies; Dominion-Provincial Conferences, and other similar undertakings.

In conclusion, the aim of this Division of the Bureau is to provide those working in the field of public health and welfare with the statistical tools they require. To achieve this goal and to carry out that task effectively, the closest contact with individuals and agencies concerned with vital and health statistics is essential. The Canadian Public Health Association, and the Vital Statistics Section of the Association since its relatively recent organization, have always played a prominent part among those bodies that facilitate this much needed co-operation.

Physical Rehabilitation of Injured Workmen in British Columbia

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A DEFINITION of rehabilitation that appeals to me is—restoration, in the greatest measure possible, of an individual's health, working capacity, and social independence. This includes both medical and vocational rehabilitation. I propose to deal only with one of the medical aspects—the convalescent period, particularly as it is dealt with by our department as set up by the Workmen's Compensation Board.

Before the establishment of rehabilitation centres an unfortunate gap existed between hospital services and industry. For instance, when a workman sustained a fracture his doctor would treat the fracture until he was satisfied it was healed and then discharge him. During the healing process the muscles had wasted and the joints had become stiff. The surgeon might know that recovery would gradually take place with continued activity, but the workman did not know. He would not know whether his pain was due to adhesions and disuse which called for more exercise, or from some unexpected complication which called for more rest. As he had been discharged from hospital, presumably no more treatment was available. His disability would be further complicated by fear of the future, and instead of trying to improve his physical condition by exercise, his whole energies would be directed towards securing a cash allowance for his disability which as time elapsed often assumed proportions entirely out of keeping with the degree of disability present. Some of these unfortunates were labelled as neurotics and others malingerers.

Today the modern treatment of fractures is very different. The fracture is reduced and fixed in splints or plaster cast until it is united, but meanwhile every joint which does not need to be immobilized is actively exercised. Every workman who has a fracture has specific exercises to do. Furthermore, the workman is advised as to the nature of his injury, the reason for special measures of treatment, and the prospects of the future. He should know that he will recover and be able to work again, and also that work will be available. All this is necessary if the workman's fears for the future are to be prevented.

Treatment is not finished when the cast or splint is removed. Physiotherapeutic measures must be given to assist reparative processes and to alleviate pain. Exercises should be intensified to build up the muscles and loosen the

Presented before the Industrial Hygiene Section at the thirty-sixth annual meeting of the Canadian Public Health Association, held in the Hotel Vancouver, Vancouver, B.C., May 17-20, 1948.

joints. Treatment is complete only when the fracture is firmly united, when the joints are mobile, when the muscles are restored, and particularly when the workman himself realizes that recovery is complete. However, it should be understood that in some of the more serious injuries permanent disability is unavoidable in spite of the best possible treatment.

These final stages of treatment can best be achieved in rehabilitation centres where the workman is under constant supervision of a trained personnel. The man who organized the first complete rehabilitation centre in Great Britain and, I think, on this continent, was Mr. Watson Jones, an orthopaedic surgeon in England. He deserves much credit for developing his ideas and popularizing this special type of care of the convalescent patient. It is after his special treatment centres that our present-day rehabilitation departments are patterned.

In British Columbia medical rehabilitation is started in the hospital—that is where we start direct supervision of the more seriously injured workmen. With the co-operation of the hospitals and the medical profession we have placed a technician in the Workmen's Compensation Board wards of our three largest coast hospitals where the majority of our major disabilities in the province are handled. This technician is required to make certain that physical therapy is adequately given, and more especially that the remedial exercises are properly carried out. The great benefit of these daily supervised exercises while still in hospital is well established. Not only is the patient's physical condition helped but there is also a good psychological effect. He realizes that the Board is taking an active interest in his recovery, and any doubts or fears he may have had about his future rapidly disappear. The optimism and cheerfulness created by this treatment cannot be overemphasized.

Following discharge from hospital, the need for close supervision of treatment, particularly of the more seriously injured convalescent workmen, was apparent and prompted the Board to establish its own rehabilitation department in October 1942. Provision was made for an estimated 150 to 200 workmen per day; however, within a year it was found to be inadequate as the number of referred cases, through the doctors' co-operation, increased so rapidly that the accommodation had to be more than doubled. We have now an average daily attendance of between 475 and 500. Our staff consists of four doctors and thirty-six trained technicians.

A brief word about the treatment and equipment of our department. It embodies most of the modes of treatment commonly employed in physical therapy: (1) Thermo-therapy—treatment by means of heat and cold. (2) Light-therapy—treatment by means of light irradiation. (3) Electro-therapy—treatment by various forms of electricity. (4) Hydro-therapy—treatment by diverse applications of water. (5) Mechano-therapy—treatment by means of massage, exercises and mechanical apparatus.

Various forms of physical agents for the application of heat are necessary in any rehabilitation department. The biological reparative action of these physical agents forms the very foundation upon which rehabilitation can be successfully built up; and this for two main reasons. Firstly, nothing is so suitable to alleviate the pain, which is a great handicap not only when trying

to use the injured muscles and joints, but also later on when trying to enlarge the radius of movements. Secondly, physical therapy offers the best means of promoting the resorption of the always-present blood extravasates, exudates and other inflammatory products. It is with the help of these measures that we are able to produce at any particular spot in the body an extensive hyperaemia with all its beneficial effects, direct and indirect.

However, it should not be considered that treatment consists merely of administering heat and massage. Exercises are a most important part of any rehabilitation program. Before the establishment of rehabilitation departments it was common practice for some doctors to tell their patients to exercise at home. We are all familiar with the usual half-hearted efforts of the patient to carry out the exercises. They failed to produce any beneficial effect, and often discouraged the workman so that he became worse instead of better. It has been amply demonstrated that exercises must be done under the supervision of trained remedial exercise instructors who have a thorough knowledge of what should be done and why. In the early stages of recovery, when pain and swelling are present, the patient is usually afraid to move the injured part. Proper exercises are most important during this period and can only be adequately given individually. Later, as improvement takes place, exercises can be given in classes. Many of our workmen have similar disabilities with weakness and wasting of the same muscle groups and therefore can be most suitably given their exercises in classes. The individuals in each class tend to develop a competitive spirit which not only makes them work all the harder but also has a good psychological effect. A workman can see how his fellows have improved; then he, too, believes that he will recover and ultimately be well again. Classes are going on continuously in our two large gymnasiums under the direction of instructors who see that each workman does his exercises correctly.

An occupational therapy department is very beneficial in the treatment of many injured workmen. Treatment in this department is designed to restore useful function to the injured part and in our particular work is most beneficial in injuries of the upper extremities. It has diversional as well as remedial value. In conjunction with it there is a well-equipped wood workshop.

My previous remarks dealt with the more seriously injured workmen but there are numerous injuries in industry, such as sprains and contusions, that require treatment which cannot be given by the attending physician. These make up a substantial number of cases at our department. In the past some of these cases would have been on time-loss for long periods of time and a certain percentage would end up with some permanent disability. We have found that under proper treatment and supervision practically all of these go on to complete recovery. This represents a major group of injured workmen and one in which medical rehabilitation pays large dividends in saving time-loss to the workman and cost to the employer.

At first it was difficult to get the medical profession to send their cases to us early enough and many of them would send us only those cases that showed no progress and gave indication of the development of a permanent disability. Frequently we would get workmen with disabilities which after passage of time

were difficult to improve even with prolonged treatment. To counteract this situation we extended a friendly invitation to the doctors to visit our department to show them how important it was to send their cases to us as early after the accident as possible. We also discuss the progress of each case under treatment with the attending doctors, and this, I feel, has done much to promote the spirit and practice of medical rehabilitation in the profession. The response from the profession has been encouraging, and we are gratified at the co-operation we are now receiving.

Medical and vocational rehabilitation should be carried on simultaneously.

Naturally some workmen, particularly those over 60 and those more seriously injured, will end up with a fairly large degree of permanent disability. In this province, where heavy primary industries predominate, it is often impossible for those workmen to go back to their original jobs or trades. It is most important that their industrial future be discussed with them early in their treatment. To be most effective, the doctor and the placement officer should work hand in hand, and after proper consideration of each individual case, should decide upon the best course to follow. It has been shown that if a workman can be given some understanding of his prospects for the future, his mental attitude towards the condition and also towards his treatment is so much improved that usually the rehabilitation period is very appreciably shortened, and also the degree of permanent disability reduced.

You might well ask: "What is the future of rehabilitation? Will it be allowed to drift into the background and be largely forgotten as it was after the first World War?" I think not, and fortunately there are many in our profession who are doing something about it. For instance, in a recent publication I read an article by Dr. H. Rusk, Consultant in Medical Rehabilitation to Veterans' Administration in Washington, wherein he outlined some of the plans of the larger hospitals in New York. The Hospital Council of Greater New York has emphasized the need for planning future hospital facilities in accordance with the newer concepts of convalescent care in which planned activity is stressed. The Council stated that the future hospitals should make provision for more complete recovery of the individual patient than has existed heretofore, and also assure continuity of medical supervision. Bellevue Hospital was first to recognize the need for medical rehabilitation facilities and has set aside 100 hospital beds for that purpose. Furthermore there are over 150 communities in the U.S.A. which are now engaged in plans for community rehabilitation centres. Various organizations in the larger cities in Canada are also making similar plans.

From the foregoing you can see that the development of medical rehabilitation is receiving much attention from medical schools and hospital authorities.

It is hoped that in the future these services will not be restricted to military and industrial casualties alone but eventually will be available for the benefit of everyone who may require them.

Canadian Journal of Public Health

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THE THIRTY-SEVENTH ANNUAL MEETING

THE HOLDING of the Canadian Public Health Association's annual meeting in Halifax, June 26-30, fittingly marks the important place which the public health program of Nova Scotia occupies in Canada and appropriately introduces the observance of the Bicentenary of Halifax, the first British settlement in Canada, which was founded on June 21, 1749, by Col. the Honourable Edward Cornwallis.

Two hundred years of history bring to mind the ravages of smallpox, which in 1749 caused 1,000 deaths in the area round about what is now Halifax. In the summer of 1746 an expeditionary force from France failed in its mission because of a devastating epidemic of what was, in all probability, typhus fever. During the voyage 1,270 men died and after landing at Chebucto Harbour—now Halifax Harbour—an additional 1,200 men succumbed to the disease. Indians who approached the camp on the shore of Bedford Basin also contracted the disease, and it is estimated that at least a third of the whole Micmac tribe in the Province died. In 1831, legislation was passed to meet the threat of cholera. All ships entering the port were required to be anchored in quarantine, and "health wardens" were appointed in Halifax. In 1862 legal provision was made for the appointment of a medical officer for the City of Halifax, and three years later a quarantine station was established at the port of Halifax.

These are only a few of the historical dates in the early story of public health in Nova Scotia.

In 1893 a Provincial Board of Health was established, with Dr. A. P. Reid as Secretary. In the following year, Dr. W. H. Hattie, one of Canada's pioneers in public health, was appointed Provincial Bacteriologist. The equipment of the laboratory was of a most elementary character and the story is told that, lacking an incubator, house surgeons at the hospital slept with the culture tubes in the pockets of their night attire. The Provincial Board of Health was not a success and, after an interval, a Department of Public Health was established in 1904. Dr. Reid was named Provincial Health Officer and continued in this appointment until 1914, when he was succeeded by Dr. Hattie.

In 1917, Halifax suffered a terrible calamity caused by an explosion following the collision of two munitions ships in the Harbour. More than 1,600 lives were lost and a large number of persons were injured. The Commonwealth of Massachusetts was most generous in its aid, and an organization known as the Massachusetts-Halifax Health Commission was set up to care for the injured and to combat the problems of housing and disease. When the immediate demands had been met, a balance of $250,000 remained, and a considerable portion of this was later made available for the establishment of the Dalhousie Public Health Clinic, which was opened in 1924 to serve as an outpatient department for the hospitals in the city of Halifax and to correlate public health and social-service work with this service. To house the Clinic, the Rockefeller Foundation erected a commodious building. The disaster and the subsequent relief work gave an impetus to the extension of health services, in which the Dalhousie Public Health Clinic played an important part.

In 1922, Dr. A. C. Jost succeeded Dr. Hattie as Provincial Health Officer, and he in turn was succeeded in 1928 by G. A. MacIntosh. Following two years of service by Dr. T. I. Byrne, from 1930 to 1932, Dr. P. S. Campbell, now Deputy Minister of Health of the Province, became Chief Health Officer in 1933.

From the standpoint of public health administration, the organization in Nova Scotia is of great interest. As early as 1920, the Province was divided into health divisions, with full-time medical officers to advise the local medical officers of health. In 1937 Cape Breton Island was organized as a full-time health unit through the assistance of the Rockefeller Foundation. At present the entire province outside the City of Halifax is divided into seven units, with a trained medical health officer in charge of each. The City of Halifax constitutes another division, making eight in all for a population of approximately 612,000 persons. In addition, each of the sixty-six towns and municipalities has a part-time medical health officer, board of health, and sanitary inspector. The unit directors give leadership to and direct the activities of the part-time officers and co-ordinate the whole program.

This excellent organization has been developed largely as a result of the establishment of the Department of Health as a separate entity of government in 1931 and the appointment in 1933 of the Honourable Frank Davis, M.D., as Minister of Health and Dr. P. S. Campbell as Chief Medical Officer. The present organization was visualized by Dr. W. A. McIntosh, who in 1934 made a study of the health needs of Nova Scotia on behalf of the Rockefeller Foundation. The Honourable Dr. Davis ably supported Dr. Campbell in the development of the program which is now functioning so admirably, and shared with him in planning for future needs. Dr. Davis' untimely death in September of last year was a great loss to the Province which he had served so well.

Nova Scotia is the only Province to maintain a general public hospital, and the new building for the Victoria General, in Halifax, which was officially opened in the spring of 1948, is one of Canada's finest. Tuberculosis has been a major problem in Nova Scotia, and one of the features of the Provincial program is the provision of free treatment. The City of Halifax has one of the most comprehensive tuberculosis-control programs in Canada, operating a

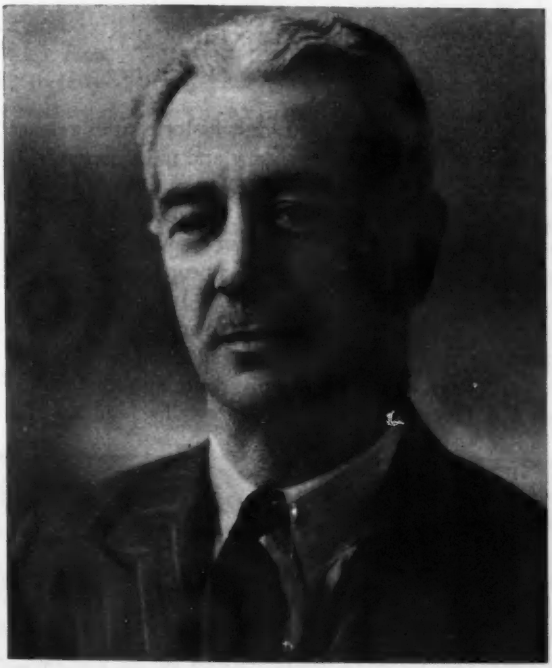
hospital with diagnostic and survey services which is under the direction of Dr. C. J. W. Beckwith, who established and developed the Cape Breton Island Health Unit. The "Co-operative" movement has made particular progress in Nova Scotia, and in its development the leadership of St. Francis Xavier University at Antigonish has been most important. In many areas the Co-operatives have been successful in improving economic conditions and they have supported plans for the extension of health services.

Nova Scotia can well be proud of its centres of higher learning. Dalhousie University has an outstanding Faculty of Medicine. Of particular interest has been the attention given to the teaching of preventive medicine through the Dalhousie Public Health Clinic, with the cooperation of the City and the Province. Students are impressed with the importance of preventive medicine in the daily work of the practitioner and see public health services in action in the community.

The Rockefeller Foundation has made generous grants to Dalhousie University and has, through its International Health Division, co-operated in the public health program of the Province. An important contribution was made by the Foundation in 1941 in undertaking a survey of the health needs in Halifax, to meet the emergency created by the war. This study was made by Dr. W. A. McIntosh, now the Foundation's Representative in Canada, who had conducted the 1934 study of health needs in the Province. Far-reaching recommendations were made. Dr. Allan R. Morton, Commissioner of Health, has been most successful in developing the program and in fulfilling the basic recommendations of the survey report, and under his able leadership Halifax today has a health department which merits high commendation. Among the recommendations of the report was the creation of a metropolitan health area which would include the environs of the city. Plans for this metropolitan area have been completed and require only final approval by the localities concerned.

In 1938 the Association had the pleasure of meeting in Halifax, under the presidency of Dr. P. S. Campbell. Few may recall the scientific contributions of the program, but all will remember the warmth of the welcome extended to them and the generosity of Nova Scotian hospitality. The Association is deeply indebted to the committee in charge of the Bicentenary for its kind invitation to hold the thirty-seventh annual meeting in Halifax this year and for the special arrangements that have been made. The meeting offers a unique opportunity for members to visit Nova Scotia at a most attractive time of year, to see Halifax during its Bicentenary celebration, and to attend one of the most important meetings that the Canadian Public Health Association has convened.

A MESSAGE FROM THE PRESIDENT
OF THE
CANADIAN PUBLIC HEALTH ASSOCIATION



As President of the Canadian Public Health Association it affords me much pleasure to extend a cordial invitation to all workers in public health to attend our annual convention in Halifax from June 27th to 30th.

Halifax is celebrating the 200th year of its founding, and the official program begins on Tuesday, June 21st, just one week ahead of our meetings, so you will find this Eastern Canadian Port in a gala mood and ready for your reception and entertainment.

Public health all over the world has developed rapidly in the course of the last few years, and it is only natural that we, as Canadians, should keep abreast of all developments. Each year we gather to discuss this progress and broaden our views, and with the National Health Grants in effect for just over one year, broader fields and intensified interest will stimulate all our discussions.

I assure you a truly hearty welcome from the citizens of Halifax and the Province of Nova Scotia, and in the words of the Bicentenary Committee–

"Hie to Halifax in '49"

Allan R. Morton

Commissioner of Health and Public Welfare,
City of Halifax, Nova Scotia.

Halifax, 1749-1949

LEONARD W. FRASER, K.C.
Manager, Bicentenary Committee

ONE of North America's oldest and most historic cities celebrates her 200th birthday this summer. The old military and naval base of Halifax is planning a Bicentennial celebration that will be Eastern Canada's biggest event of the year, running from June to September. The Mayor, with his Bicentenary Committee, has prepared a summer-long program of entertainment and extended a civic welcome to all parts of the continent for people to come and recapture the pioneer spirit in the capital city of Nova Scotia. Intermingled with the program of entertainment there will be mass religious services and demonstrations. All will centre round the main theme, two hundred years in Halifax, and serve to balance the general program, making it universally meaningful to all who attend.

Ever since the Honourable Edward Cornwallis founded Halifax in June,

—Photo by Nova Scotia Bureau of Information.

HALIFAX HARBOUR

R.M.S. Aquitania in foreground with Union Station and Nova Scotian Hotel. Left background shows new Victoria General Hospital and Dalhousie Medical Buildings. Centre background, Lord Nelson Hotel. Right background, the Citadel.

1749, the port has played a magnificent role in the development of Canada and her neighbours. Situated on the edge of the mighty Atlantic, it has been one of the country's chief shipping outlets, with ocean liners and freighters from all countries utilizing the magnificent harbour the Indians knew as "Chebucto". In peace and war, the strategic importance of Halifax has earned her the reputation of "Warden of the Honour of the North".

And while the city has been modernized down through the years, important links with the historic past have been carefully preserved and will prove one of the main attractions for those attending this summer's celebrations. Historic tours of the city will take Bicentenary guests to such places as the Citadel, from whose time-honoured ramparts they may survey the whole community and the long harbour running into Bedford Basin—the convoy haven in World War II. Travelling on the first complete electric trolley coach system in Canada—one which has just replaced the former tram cars—visitors may ride in comfort to scenic spots like the Public Gardens; the North West Arm, Halifax's aquatic sports centre; old Saint Paul's Church, the oldest Protestant church in Canada; to Province House and City Hall, reminiscent of the days when law was proclaimed in an enchanting new country; to Ocean Terminals on the harbour front where world travellers say welcome and Godspeed as they arrive from or depart for the four corners of the earth, and where millions of tons of goods are sorted and loaded on the merchantmen plying the seven seas. They can see the cobblestones on ancient streets and modern paved thoroughfares leading in, out of and through the city—statues and plaques which tell their own story of the first days of the new world.

Then, for leisure moments, there are the excellent sandy beaches, the fishing streams, and golf and tennis facilities all within easy reach of any of Halifax's modern hotels. From Halifax, the capital, motorists are within a few hours of the romantic land of Evangeline, the scenic South Shore, and Nova Scotia's many other beauty spots.

By plane, car, train, bus and ship, Halifax's guests will pour in from every direction and from many countries, for this old city has many friends in far places. The Mayor, in issuing his welcome, does so with the knowledge that all will have a good time—a memorable time—as they witness the hospitality of Halifax, a city which may well feel proud of 200 years in history and her bright prospects as she enters upon her third century.

The Public Health of Halifax and Dalhousie University

H. L. SCAMMELL, M.D.
Registrar
Dalhousie University

TO MAKE its success sustained and progressive, any organized public health program must have: (a) efficient organization; (b) trained personnel in sufficient numbers, with facilities for augmentation as desired; (c) a high standard of education and professional practice by the local medical profession; (d) enlightened civic administration and intelligent public support; and (e) adequate facilities to carry out prevention programs and to care for those who are ill.

Halifax has gone a long way towards the achievement of that ideal. It has been greatly aided in its effort by the presence of the Provincial Health Department, and to an almost incalculable degree by Dalhousie University. It is with the role played by the latter that this article deals briefly.

Dalhousie had a Medical School as far back as 1868. In 1875 this field of endeavour was taken over by the Halifax Medical College, which worked in affiliation with the University as a separate Corporation until 1911, when the School returned completely to the aegis of Dalhousie. In 1923 it was rated a Grade A school by the Rockefeller Foundation, and has continued ever since as an Approved School by the Foundation and the Association of American Medical Colleges. It regards its constituency as the Maritime Provinces of Canada including Newfoundland, and admits 58 students a year out of between 300 to 400 applicants. A minimum of two university years of pre-medical education is required, followed by five years of medical study, the last year being one of rotating interneship. The ideal is to produce an adequately equipped general practitioner. As a regular part of his education the student becomes involved in the civic public health program. Since 1923 the University has operated a public health clinic open to the people of Halifax and its environs. Until recently this building housed both curative and preventive medicine. Since the opening of the new Victoria General Hospital building, the greater part of the curative work has been transferred to that fine institution's out-patient department, leaving opportunities to increase the preventive aspects of the work with Dalhousie. The scope of the teaching program of public health in the medical course will be thereby increased. In the quarter of a century since its inception the Dalhousie Public Health Clinic has been a tremendous educational factor. His daily attendance there gave the medical student practical experience in all methods of immunization, in venereal disease control, in maternal welfare, in nutrition, in the curative aspects of disease, and—of great importance—the appreciation of the viewpoint of the public in all these procedures. The result has been a steady output of young

physicians who have evinced a special interest in the field of public health, or who have carried a comprehensive general knowledge of it into general practice or the specialties. The local effect of this education has been great, the general effect greater. The City has thus doubly shared the benefit, for a corporation constantly invaded by units of population, unimmunized, and uneducated from the standpoint of public health, is confronted with a menacing problem.

This year the University will inaugurate a diploma course in public health nursing. Close co-operation with the City Health Department is essential, as this is the largest source of necessary field work for the students. At the same time a combined science and nursing course leading in five years to the degree of Bachelor of Nursing Science will go into operation, producing a nurse capable of assuming positions of leadership and responsibility in the nursing field. With training in public health also available, she will be an invaluable adjunct. Dalhousie is supported financially by the Provinces of Nova Scotia, New Brunswick and Prince Edward Island in the first of these efforts; the latter will be undertaken with the co-operation of the Victoria General Hospital.

Also in co-operation with the three provinces mentioned, the University is organizing graduate training in psychiatry for physicians and this will be extended to include public health nurses, social service workers, and school teachers.

The City of Halifax is profoundly conscious of the presence of the University in its midst. From an economic standpoint it is its second largest industry. From September to May each year the homes of Halifax are infiltrated by a group of eager and intelligent young men and women seeking an education. Their youth is stimulating and their co-operation in public health efforts has a beneficial effect on our citizens. Each student is subjected to a thorough physical examination each year at the Dalhousie Public Health Clinic. That means that this year 1,770 youthful individuals go out with the idea that the best way to fight ill health is to avoid it.

Since the hospitals ot the City and the Victoria General Hospital, owned by the Province, engage in part of the hospital teaching program of the students of medicine, they naturally seek guidance from the University in selecting their medical visiting staffs. Our available bed capacity in this city is already large, but plans are under way to increase it substantially. Thus we can see in the immediate future a sufficient bed capacity for our needs if we do our part in keeping the occupants of these beds in motion.

All these factors have reacted favourably on the City Health Organization. The Corporation, backed by the citizens, demand a good department, efficiently operated. While perfection can never be reached, it is nevertheless a fact that the presence of Dalhousie University in this city assures steady progress of all public health effort, a degree of encouragement which is beyond evaluation.

Thirty-Seventh Annual Meeting

CANADIAN PUBLIC HEALTH ASSOCIATION

Nova Scotian Hotel, Halifax

JUNE 27-30, 1949

COMMITTEE CHAIRMEN

(HALIFAX)

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Committee on Publicity and Exhibits	DR. C. B. STEWART
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DR. R. D. DEFRIES — DR. D. L. MACLEAN
DR. WM. MOSLEY — DR. L. A. PEQUEGNAT
DR. A. H. SELLERS

DIRECTORY OF SESSIONS

MONDAY, JUNE 27

10.00 a.m.—Nova Scotia Health Officers' Meeting. Salon E.
2.30 p.m.—Executive Council, Canadian Public Health Association, Salon E.
8.00 p.m.—Executive Council. Salon E.

TUESDAY, JUNE 28

9.00 a.m.—Registration. Mezzanine Floor.
10.00 a.m.—Musical Program. Ball Room.
10.15 a.m.—First General Session. Ball Room.
1.30 p.m.—Assemble for cruise on H.M.C.S. "Haida".
5.00 p.m.—Garden Party.
7.00 p.m.—Drives about city and environs.
8.15 p.m.—Health education films. Salon A.

WEDNESDAY, JUNE 29

9.00 a.m.—**Section Meetings:**
Epidemiology. Ball Room.
Public Health Administration. Salon E.
Public Health Education. Salon A.
Public Health Nursing. Bedford Room.

12.30 p.m. Luncheon. Speaker: F. W. JACKSON, M.D., D.P.H.
Main Dining Room. Tickets, $2.50.
2.00 p.m.—Second General Session. Ball Room.
6.30 p.m.—Reception. Guests of City of Halifax Bicentenary Committee. Ball Room.
7.30 p.m.—Annual Dinner. Main Dining Room. Tickets, $3.50.

THURSDAY, JUNE 30

9.00 a.m.—**Section Meetings:**
Epidemiology. Ball Room.
Public Health Administration. Salon E.
Public Health Nutrition. Salon A.
Venereal Disease Control. Bedford Room.
12.30 p.m.—Luncheon. Speaker: The Honourable L. D. CURRIE.
Main Dining Room. Tickets, $2.50.
2.00 p.m.—Third General Session. Ball Room.

TENTATIVE PROGRAM

MONDAY, JUNE 27—10.00 a.m.

NOVA SCOTIA HEALTH OFFICERS' MEETING
Salon E

MONDAY—2.30 p.m.

EXECUTIVE COUNCIL, CANADIAN PUBLIC HEALTH ASSOCIATION
First Session—Salon E

MONDAY—8.00 p.m.

EXECUTIVE COUNCIL, CANADIAN PUBLIC HEALTH ASSOCIATION
Second Session—Salon E

TUESDAY, JUNE 28—9.00 a.m.

REGISTRATION
Mezzanine Floor

TUESDAY—10.15 a.m.

FIRST GENERAL SESSION
Ball Room

Presiding: ALLAN R. MORTON, M.D., M.P.H., Commissioner of Health and Public Welfare, Halifax, and President, Canadian Public Health Association.

10.15—**Opening Addresses:**
Representative of the Government of Nova Scotia.
His Worship Col. GORDON S. KINLEY, Mayor of Halifax.
ALLAN R. MORTON, M.D., M.P.H.

11.00—**Medical Care Programs in Canada.**
A. D. KELLY, M.D., Assistant Secretary, Canadian Medical Association, Toronto.

TUESDAY—1.30 p.m.

Cruise on H.M.C.S. "HAIDA"—by courtesy of
the Minister of National Defence and
the Flag Officer, Atlantic Coast, Royal Canadian Navy

Buses will leave the Nova Scotian Hotel for the pier at 1.30.

TUESDAY—5.00 p.m.

GARDEN PARTY

TUESDAY—7.00 p.m.

DRIVES ABOUT CITY AND ENVIRONS

TUESDAY—8.15 p.m.

HEALTH EDUCATION FILMS
Salon A

WEDNESDAY, JUNE 29—9.00 a.m.

EPIDEMIOLOGY SECTION
Ball Room

Presiding: J. S. ROBERTSON, M.D., Assistant Deputy Minister of Health, Province of Nova Scotia, and Chairman of the Section.

9.00—**The Use of Combined Antigen T.A.B.T.D.**
Wing Commander G. D. CALDBICK, Royal Canadian Air Force, Ottawa.

9.20—**An Epidemic of Poliomyelitis amongst Canadian Eskimos, February-March, 1949.**
A. F. W. PEART, M.D., C.M., D.P.H., Chief, Division of Epidemiology, Department of National Health and Welfare, Ottawa.

9.40—**Observations on More Recent Methods of Immunization.**
M. H. BROWN, O.B.E., M.D., D.P.H., Professor of Hygiene and Preventive Medicine, and Research and Clinical Associate in the Connaught Medical Research Laboratories, University of Toronto.

10.00—**A Consideration of Some of the Military Hygiene Problems Encountered in the Arctic and Subarctic.**
Lt.-Col. E. J. YOUNG, R.C.A.M.C., Department of National Defence, Ottawa.

10.20—**New Opportunities for Health Units in Tuberculosis Prevention.**
C. E. MADDISON, M.D., D.P.H., Director of Tuberculosis Control, Department of Health and Social Services of New Brunswick (Moncton Tuberculosis Hospital).

10.40—**Progress in the Treatment of Typhoid Fever with Vi Bacteriophage.**
JEAN-MARC DESRANLEAU, B.A., L.S.Ch., Associate Bacteriologist, Division of Laboratories, Ministry of Health of Quebec, Montreal.
Discussion: E. M. FOGO, M.D., Epidemiologist, Department of Health and Public Welfare of Halifax.

WEDNESDAY—9.00 a.m.

PUBLIC HEALTH ADMINISTRATION SECTION
Salon E

Presiding: M. R. ELLIOTT, M.D., D.P.H., Director, Extension Services, Department of Health and Public Welfare of Manitoba, and Chairman of the Section.

9.00—Public Health Services during the Floods in British Columbia—1948.

GEORGE ELLIOT, M.D., C.M., D.P.H., Assistant Provincial Health Officer; R. BOWERING, B.Sc., C.E., M.A.Sc., Public Health Engineer; and MISS MONICA FRITH, R.N., B.A., B.A.Sc., M.P.H., Director, Public Health Nursing.
(This paper will be presented by G. F. AMYOT, M.D., D.P.H.)

9.20—Title to be announced.

H. R. O'BRIEN, M.D., Office of International Health Relations, United States Public Health Service, Washington.

9.40—Panel Discussion: The Independent Commission in the Administration of Medical-Care Programs.

Chairman: M. R. ELLIOTT, M.D., D.P.H.
G. F. AMYOT, M.D., D.P.H., Provincial Health Officer and Deputy Minister of Health for British Columbia, Victoria.
F. W. JACKSON, M.D., D.P.H., Director of Health Insurance Studies, Department of National Health and Welfare, Ottawa.
A. D. KELLY, M.D., Assistant Secretary, Canadian Medical Association, Toronto.
VINCENT MATTHEWS, M.D., D.P.H., Director, Health Region No. 1, Swift Current.
F. D. MOTT, M.D., C.M., Chairman, Saskatchewan Health Services Planning Commission, Regina.

WEDNESDAY—9.00 a.m.

PUBLIC HEALTH EDUCATION SECTION
Salon A

Presiding: ANNE GRANT, B.A., M.P.H., Education Secretary, Canadian Tuberculosis Association, Ottawa, and Secretary of the Section.

Business Session.

Outline of the Program for 1950.

Election of Officers for 1949-50.

WEDNESDAY—9.00 a.m.

PUBLIC HEALTH NURSING SECTION
Bedford Room

Presiding: MISS HELEN M. CARPENTER, B.S., M.P.H., Lecturer in Nursing, School of Nursing, University of Toronto, and Chairman of the Section.

1. **Business.**
2. **Trends in Maternal and Child Health.**

MISS HELEN MCARTHUR, B.Sc., M.A., National Division, Canadian Red Cross Society.

Discussion:

MISS LYLE CREELMAN, B.A.Sc., M.A., Canadian Public Health Association.
MISS MONICA FRITH, B.A.Sc., M.P.H., Provincial Department of Health, British Columbia.

Miss Dorothy Code, P.H.N., Health Region No. 6, Provincial Department of Public Health, Saskatchewan.
Miss Isobel Black, B.Sc., Montreal Branch, Victorian Order of Nurses for Canada.
Miss Muriel Hunter, P.H.N., Provincial Department of Health, New Brunswick.
Miss Hazel MacDonald, B.A., Cape Breton Island Health Unit, Nova Scotia.

WEDNESDAY—12.30 p.m.

LUNCHEON
Main Dining Room

Speaker: F. W. Jackson, M.D., D.P.H.
Director of Health Insurance Studies
Department of National Health and Welfare, Ottawa

Tickets ($2.50) will be on sale at the Registration Desk

WEDNESDAY—2.00 p.m.

SECOND GENERAL SESSION
Ball Room

Presiding: Allan R. Morton, M.D., M.P.H.

Some Aspects of Public Health Practice in Canada.
J. H. Baillie, M.D., D.P.H., and Miss Lyle Creelman, B.A.Sc., M.A., Canadian Public Health Association, Toronto.

Discussion:
J. S. Kitching, B.A., M.D., D.P.H., Assistant Medical Officer of Health, Hamilton, Ont.
Miss Helen G. McArthur, B.Sc., M.A., Director of Nursing, National Division, Canadian Red Cross Society, Toronto.
William Mosley, M.D., D.P.H., Director, East York—Leaside Health Unit, Ontario.

WEDNESDAY—6.30 p.m.

RECEPTION, CITY OF HALIFAX BICENTENARY COMMITTEE
Ball Room

WEDNESDAY—7.30 p.m.

ANNUAL DINNER
Main Dining Room

Tickets ($3.50) will be on sale at the Registration Desk.

Presiding: Allan R. Morton, M.D., M.P.H.

Presentation of honorary life membership in the Canadian Public Health Association.

Greetings from the American Public Health Association.
Charles F. Wilinsky, M.D., Deputy Health Commissioner of Boston, Mass., and President of the American Public Health Association.

Address: Public Health in Newfoundland.
Leonard Miller, M.D., D.P.H., Director of Medical Services for Newfoundland.

THURSDAY, JUNE 30—9.00 a.m.

EPIDEMIOLOGY SECTION
Ball Room

Presiding: CARL R. TRASK, M.D., D.P.H., District Medical Health Officer, Saint John

9.00—Paracolon Bacilli in Water.
W. K. SHARPE, M.A.Sc., Director, Sanitary Engineering Division, and F. W. JELKS, B.Sc., Provincial Bacteriologist, Department of Health and Welfare of Prince Edward Island, Charlottetown.

9.20—A Brief Review of Mortality in Nova Scotia.
J. S. ROBERTSON, M.D., D.P.H., Assistant Deputy Minister of Health, Halifax.

9.40—An Outbreak of Pulmonary Tuberculosis in a Public School.
G. M. SMITH, M.D., D.P.H., Divisional Medical Health Officer, Fundy Division, Windsor, N.S.; MAUDE MCLELLAN, R.N., Public Health Nurse; and J. E. HILTZ, M.D., D.P.H., Medical Superintendent, Nova Scotia Sanatorium.

10.00—Title to be announced.
N. E. MCKINNON, M.B., Professor of Epidemiology and Biometrics, and Research Member of the Connaught Medical Research Laboratories, University of Toronto.

10.20—Notes on the Epidemiology of Tinea Capitus due to Microsporum Audouini.
J. M. PARKER, M.D., D.P.H., Experimental Station, Defence Research Board, Department of National Defence, Suffield, Alberta; and WILLIAM MOSLEY, M.D., D.P.H., Director, East York—Leaside Health Unit, Ontario.

10.40—The Hazards of Tuberculosis in the General Hospital.
C. B. STEWART, M.D., D.P.H., Professor of Epidemiology, Dalhousie University, and C. J. W. BECKWITH, M.D., D.P.H., Medical Superintendent, Halifax Tuberculosis Hospital.

11.00—Business Session. Election of Officers for 1949-50.

THURSDAY—9.00 a.m.

PUBLIC HEALTH ADMINISTRATION SECTION
Salon E

Presiding: M. R. ELLIOTT, M.D., D.P.H., Director, Extension Services, Department of Health and Public Welfare of Manitoba, Winnipeg, and Chairman of the Section.

9.00—A Health Service for Federal Government Employees.
E. L. DAVEY, M.D., D.P.H., Assistant Chief, Civil Service Health Division, Department of National Health and Welfare, Ottawa.

9.25—Public Health and the General Practitioner in Rural Areas.
J. J. STANTON, M.D., C.M., Municipal Health Officer for Guysboro County, Canso, N.S.

9.45—Cross-Connections and Backsiphonage in Water Distribution Systems.
E. C. THOMAS, B.E., M.Sc., Sanitary Engineer, Department of Health, Halifax.

10.05—**Secondary School Health Service.**
WILLIAM MOSLEY, M.D., D.P.H., Director, East York—Leaside Health Unit, Ontario.

10.25—**Stream Pollution in New Brunswick.**
ALWYN J. CAMERON, B.Sc., Sanitary Engineer, Department of Health of New Brunswick, Fredericton.

10.45—**Mass Audiometry.**
CARL R. TRASK, M.D., D.P.H., District Medical Health Officer, Saint John.

11.05—**The Canadian Immigration Service.**
C. P. BROWN, M.A., M.B., D.P.H., Assistant Director, Health Services, Department of National Health and Welfare, Ottawa.

11.25—**Business Session. Election of Officers for 1949-50.**

THURSDAY—9.00 a.m.

PUBLIC HEALTH NUTRITION SECTION

Salon A

Presiding: D. W. S. PUFFER, B.A., M.B., D.P.H., Assistant to the Chief Medical Officer of Health, Department of Health of Ontario, Toronto.

9.00—**Title to be announced.**
JUANITA ARCHIBALD, Provincial Nutritionist, Department of Public Health of Nova Scotia.

9.20—**Problems Encountered in a Rural School Lunch Program.**
FLORENCE SWAN, B.Sc., C.P.H., Nutritionist, Department of Health of New Brunswick.

9.40—**Evaluation of Nutrition Material.**
MARY ANGUS, Chief Nutritionist, Nutrition Services, Department of National Health and Welfare.

10.00—**The Use and Abuse of Dietary Standards.**
E. GORDON YOUNG, Professor of Biochemistry, Dalhousie University, Halifax.

10.20—**Business Session. Election of Officers for 1949-50.**

THURSDAY—9.00 a.m.

VENEREAL DISEASE CONTROL SECTION

Bedford Room

Presiding: B. D. B. LAYTON, M.D., Chief, Division of Venereal Disease Control, Department of National Health and Welfare, Ottawa, and Chairman of the Section.

9.00—**Venereal Disease Control Activities in Canada: A Review.**
B. D. B. LAYTON, M.D.

9.20—**Contact Tracing in Toronto, 1947-48.**
A. L. MCKAY, B.A., M.D., D.P.H., Director of Venereal Disease Control, Department of Public Health, Toronto.

9.40—Venereal Disease Control amongst the Indians.

O. J. LEROUX, M.D., Indian Health Services, Department of National Health and Welfare, Ottawa.

10.00—Nomenclature and Interpretation of Results of Serological Tests for Syphilis.

E. L. BARTON, M.D., Director of Provincial Laboratories, and W. GORDON BROWN, M.D., D.P.H., Acting Director, Division of Venereal Disease Control, Department of Health of Ontario, Toronto.

10.20—Urethritis—Specific and Non-specific

C. L. GOSSE, M.D., F.A.C.S., Instructor in Urology, Dalhousie University, and Director of the Venereal Disease Clinic, Victoria General Hospital, Halifax.

10.40—Business Session. Election of Officers for 1949-50.

THURSDAY—12.30 p.m.

LUNCHEON

Main Dining Room

Presiding: ALLAN R. MORTON, M.D., M.P.H.

Speaker: THE HONOURABLE L. D. CURRIE

Tickets ($2.50) will be on sale at the Registration Desk.

THURSDAY—2.00 p.m.

THIRD GENERAL SESSION

Ball Room

Presiding: J. T. PHAIR, M.B., D.P.H., Deputy Minister of Health and Hospitals, Province of Ontario, and President-Elect, Canadian Public Health Association.

2.00—Progress of Mental Hygiene Programs in Public Health in Canada.

CHARLES G. STOGDILL, M.A., M.D., Chief, Mental Health Division, Department of National Health and Welfare, Ottawa.

2.30—Public Relations.

JULES GILBERT, B.A., M.D., D.P.H., Director of Health Education, Ministry of Health, Quebec, and Assistant Director, School of Hygiene, University of Montreal.

3.00—The Development of Public Health Nursing Today and Tomorrow.

EDNA L. MOORE, Reg. N., Director, Division of Public Health Nursing, Department of Health of Ontario, Toronto.

3.30—The Present Status of Dental Preventive Measures.

H. K. BROWN, D.D.S., D.D.P.H., Chief, Dental Health Division, Department of National Health and Welfare, Ottawa.

The Entertainment Program

J. S. ROBERTSON, M.D., D.P.H.
Assistant Deputy Minister of Health

IN addition to the features of the program—the cruise on H.M.C.S. "Haida", the garden party, the reception by the Bicentenary Committee of Halifax, and the annual dinner—members attending the Association's meeting can be assured of excellent entertainment facilities.

The city has recently put into operation a new trolley coach system, making transportation to any part of the city comfortable and convenient. Theatres are conveniently located—the nearest to the hotels being the Capitol and the Paramount. Other excellent movie houses are scattered throughout the city. Shopping facilities are excellent and easily reached from the principal hotels. Visitors will be especially interested in the displays of native woollens and other handicrafts.

For those who wish to play golf, there are two excellent courses, Ashburn and Brightwood. Visitors are welcome on payment of the usual grass fees. Both courses are 18 holes and are regarded as tournament courses. Ashburn is located on the city limits, while Brightwood is across the harbour near Dartmouth.

Numerous boating and swimming clubs around the North West Arm are within the city limits. Visitors' privileges can be arranged for at most of the clubs, and facilities are excellent. The North West Arm is salt water and sea bathing can be enjoyed without travelling outside the city. Numerous sand beaches are available within short drives, and lakes and rivers are close if fresh-water bathing is preferred.

Fishing, either inland or sea, can be indulged in by such enthusiasts. Inland there are trout, salmon, bass, and perch. Salt-water anglers can try for and obtain tuna, cod, and other sea varieties. Guides are available.

For those who wish to arrange a beach party, arrangements can be made for a beach-cooked lobster supper at Hubbards, a few miles from Halifax.

Many will enjoy the drives around Halifax which show the historic and scenic beauty—such places as the Citadel, a fort built in 1829 which overlooks the city and harbour; Bedford Basin, where the convoys formed up during the war; the Public Gardens in the centre of the city, famous all over the world; the Town Clock, built in 1802 and still running; the Dockyard, started in 1749; Point Pleasant Park, with its Martello Tower; historic St. Paul's Church and Province House; and Dalhousie University. These are only a few of the historic and scenic spots which are worthy of a visit; the time spent will be well repaid.

The various Service Clubs meet in the main hotels and visitors from associated clubs are always welcome.

Some delegates may wish to get out of the city for a meal. There are places with an excellent cuisine such as the Medo Club and Lakeledge Lodge. Those who enjoy horseback riding have available the facilities of the Circle J Ranch at Fall River.

Hotel Reservations

A LIMITED number of DOUBLE rooms and TRIPLE rooms are available at the Nova Scotian Hotel (convention headquarters), the Lord Nelson, and the Carleton, at the following rates:

	Single Rooms	Double Rooms	Triple Rooms
Nova Scotian	—	$9.00	$10.50
Lord Nelson	—	8.00	10.50
Carleton	—	6.50	8.50

ALL SINGLE rooms have been disposed of.

Requests for reservations must be made through the chairman of the Committee on Reservations, Dr. D. J. Mackenzie, Public Health Laboratory, Morris Street, Halifax. Prompt action is essential, as it may not be possible to confirm reservations after June 15th even if accommodation is available.

The coupon on page 8 is for your convenience.

Travel Arrangements

ALTHOUGH it was announced in the April issue that the Standard Certificate Plan would be available for rail travel, the Committee on Transportation has recommended the use of the Summer Tourist Plan, as it offers members —particularly those going to Halifax from considerable distances—lower rates. The Association has therefore cancelled its arrangement with the Canadian Passenger Association for the Standard Certificate Plan and no special arrangements for travel are being made.

For information about summer excursion rates, consult your local travel agent.

Exhibits

THE attention of delegates is directed to the exhibits of the following companies, which will be on view on the mezzanine floor:

Bristol-Myers Company of Canada Ltd., Montreal
Canadian Tampax Corporation Ltd., Brampton, Ont.
Carnation Company Limited, Toronto
Lederle Laboratories Division, North American Cyanamid Limited, Montreal
Merck & Co. Limited, Montreal
Winthrop-Stearns Inc., Windsor
Maritime Medical Care Incorporated, Halifax
Plan for Hospital Care, Halifax

Abstracts

Penicillin for Oral Prophylaxis of Venereal Disease—A Warning

IT HAS BEEN SHOWN that 100,000 to 250,000 units of penicillin by mouth, taken after exposure to venereal disease, reduces the incidence of gonorrhoea by 85 per cent or more. It has also been shown, however, that the effectiveness of this prophylaxis decreases fairly rapidly as the length of time between exposure and ingestion of penicillin increases. When this interval is about fifteen hours, prophylaxis is achieved apparently in less than 50 per cent.

With this in mind as well as the unknown risk of developing and spreading penicillin-resistant strains as a result of inadequate dosage, general adoption of the oral prophylaxis measure is felt to be premature. In addition the method is economically unsound. In the United States Navy it is estimated that each case of gonorrhoea prevented would have cost approximately $30.00 had oral prophylaxis with 250,000 units of penicillin been added to the standard methods. However, under special circumstances where risk of contracting gonorrhoea is high its use might be considered. In general it is felt that adoption of this procedure should be delayed until more is known about the possible development of penicillin-resistant strains of gonococci and about its effect in the prophylaxis of syphilis.

Editorial, J.A.M.A., 1949, **139:** *925.*

Children's Cardiac Clinics

THAT CARDIAC CLINICS for children with suspected heart disease serve a useful purpose is the theme of this article. The values indicated are manifold. In the first place, much unnecessary cardiac invalidism and neurosis would be avoided if expert diagnosis and guidance were made available, so that restriction of activities for "innocent" or "functional" murmurs would not be prescribed. Similarly, inactive rheumatic heart disease and acyanotic congenital heart disease in children need not suffer unnecessary restriction. On the other hand, advice as to choice of suitable occupation, sedentary rather than manual work, is indicated. Reference is made to a current article which reported that of 200 children seen at a cardiac clinic 81 had suffered needless and unhealthy limitation of their activities.

The second great value would come through the collection of information made possible by prolonged follow-up studies. This would hold both for rheumatic and congenital heart disease. In the latter type it is particularly pertinent in view of the increasing use of surgery and the corresponding need for accurate assessment of operative risks as compared with those inherent in the defect itself.

B.M.J., 1949, **4603:***534.*

5,000 Consecutive Deliveries Without a Maternal Death Due to Pregnancy

THE REMARKABLE RECORD indicated in the title was achieved by the Halifax Municipal Obstetric Service between September, 1946, and October, 1948. The deliveries, all after the twenty-eighth week of pregnancy, were made in the Halifax General Hospital or in the home by the Halifax Domiciliary Service or independent midwives.

Admission to the General Hospital, which serves a population of about a quarter of a million, is restricted to emergency cases, primigravidae, patients with abnormalities, cases of multiple pregnancy, and those whose homes are unsuitable for delivery. The author, in charge of the service, attends antenatal clinics and follows all abnormal cases throughout the pregnancy and labour. In addition, all emergency admissions, and abnormalities or conditions of patients encountered on admission which might indicate special risk were reported to and supervised by the director personally. Blood and plasma banks, including group O rhesus-negative blood, are maintained. The Domiciliary Service comes under the supervision of the same director and the midwives summon medical aid whenever necessary. In 795 such deliveries medical aid was sought 274 times.

Of the 5,000 deliveries almost half were primigravidae. Only 4 cases of eclampsia occurred and all survived. There were 117 stillbirths in the 5,069 births, or a rate of 23.07 per thousand. Neonatal deaths totalled 59, a rate of 11.91, with the chief causes

trauma during labour and gross foetal abnormality.

An outline of the treatment of the various major complications, haemorrhage, toxaemia, infection and so forth, is presented and includes the use of drugs, antibiotics, sedatives and anaesthetics as well as general management of the patients.

Contributing most significantly to this outstanding achievement was the provision of skilled staff to deal with abnormalities. Important in this respect was the integration of the hospital, antenatal, domiciliary and specialist services in the Halifax Municipal Obstetric Organization. Penicillin, sulfa drugs and blood bank facilities also played their part.

Norman Emblin, Brit. M. J., 1949, **4597**: *260.*

Treatment of Alcoholism with a sensitising Drug

USE OF A SENSITIZING DRUG, tetraethylthiuramdisulfide ("Antabuse"), in the treatment of a series of 83 chronic alcoholics is described in this article. The drug produces a deep flush, rapid pulse, dyspnoea, and other unpleasant symptoms after each drink and thereby creates a distaste for alcohol.

While no undesirable side-effects have been noted in observations over a six-month period, medication should be given only after a thorough physical examination and caution is required in the presence of organic disease. Investigation of the social and psychiatric background is also important in determining the full treatment, which often requires psychological analysis and psychotherapy in addition to the drug treatment.

Apparent cures were obtained in almost 90 per cent of those treated, sometimes within a few weeks. Inebriates with psychoneurotic or serious psychotic disorders proved difficult to manage, as would be expected, since the desire for treatment was less sincere and continuation therefore irregular.

O. Marpensen-Larsen, Lancet, 1948, **255**: *1004.*

Primary Multiple-Pressure Vaccination of Infants—Comparison with Scarification

A COMPARISON OF RESULTS is presented from the primary vaccination of 100 infants by both the multiple-pressure and scarification (¼ in.) methods. The multiple-pressure method proved superior to scarification in the number of primary takes on first trial and on revaccination of 17 infants in whom first attempts by both methods failed.

The multiple-pressure technique, while simple, requires a little experience. After preparation of the arm in the usual way, a freshly sterilized straight needle, held tangentially to the arm between the thumb below and forefinger and middle finger above, is pressed firmly into the drop of lymph and then lifted out, clear of the skin, in a plane perpendicular to the skin surface. Ten or more rapidly repeated pressures are made approximately in the same spot. The resultant take is essentially similar to that following other methods.

R. J. W. Rees, Lancet, 1948, **255**: *943.*

Bacteremia Following Tooth Extraction; Prevention with Penicillin and 3, 4-Dimethyl-5-Sulfanilamide-Isoxazole (Gantrosan)

BLOOD CULTURES positive for nonhemolytic streptococci were obtained in 35.3 per cent of 68 patients following tooth extraction without preoperative medication. In a group of 28 patients given 300,000 units of procaine penicillin in oil two hours before tooth extraction only two (7.2 per cent) positive cultures were obtained. In a group of 8 patients who received 100,000 units of aqueous penicillin and a group of 18 given 2 gm. of Gantrosan (sulfonamide) two hours preoperatively, blood cultures were negative. Thus in the treated groups the incidence of temporary bacteraemia was 3.7 per cent in contrast to the 35.3 per cent in the control group.

Prophylactic use of penicillin or sulfonamide would seem to be strongly indicated prior to tooth extraction, especially in persons with known valvular heart disease.

P. S. Rhoads and W. R. Schram, J. Lab. & Clin. Med., 1948, **11**: *1461.*

Familial Outbreak of Staphylococcal Infection of Bone and Joint

THIS ARTICLE IS OF INTEREST as a striking example of recent developments in the epidemiology of staphylococcal infections made possible by the discovery of serological and bacteriophage typing methods. Such methods, already successfully applied to outbreaks of

pemphigus neonatorum, food poisoning and surgical cross-infections, were employed in this unusual familial outbreak. Two of a family of 7 children developed acute suppurative arthritis, and a third acute osteomyelitis, all within three months. The same phage type of staphylococcus was isolated from the lesions of all 3, and also from the nose of a brother recently recovered from impetigo and from the nose of a sister with no history of acute infection. The child who developed osteomyelitis and one of the two children with arthritis had had impetigo and boils some months previously.

This report makes it abundantly clear that the infectivity and contagious nature of staphylococcal infections make household precautions essential in the presence of an infection.

M. H. M. Harrison, Lancet, 1948, **255**: *727.*

EMPLOYMENT SERVICE

Advertisements regarding "positions available" and "personnel available" will be published in from one to four consecutive issues, depending upon the requirements of the agency or person concerned. They are limited to seventy words or less, with a confidential box number if desired. There is no charge for this service to members of the Association. Health agencies are charged a flat rate of $10.00 for the advertisements (up to four consecutive issues) and for the service. The rate for non-members is $5.00. The service includes confidential clearing of information between prospective employer and employee if desired.

The Canadian Red Cross Society invites applications from public health nurses for positions in Outpost Services in British Columbia, Manitoba, New Brunswick, and Quebec. Commensurate salaries for experience and qualifications. Transportation arrangements under certain circumstances. For further particulars apply: National Director, Nursing Services, Canadian Red Cross Society, 95 Wellesley Street, Toronto 5, Ontario.

Public Health Nurse—Positions now available with the Prescott and Russell County Health Unit. Must speak French. Cars supplied or allowance for own car. Apply, stating experience, to: Prescott and Russell Health Unit, 33 Main Street West, Hawkesbury, Ontario.

Wanted: Three Public Health Nurses to commence duties in the Elgin—St. Thomas Health Unit this summer. Present minimum salary is $1800. subject to suitable adjustments for experience. The Unit offers cumulative sick leave, car allowance of $655. per year, interest-free loan for purchase of car, contributory pension plan after one year's employment and four weeks' vacation annually. Apply Supervisor of Nurses, City Hall, St. Thomas, Ont.

Wanted: Public Health Nurses (2). Applications are invited from qualified Public Health Nurses for generalized service. Apply in writing, stating qualifications, age, experience, salary expected, etc., to Medical Officer of Health, Health Department, City of Kingston, Ontario.

Sanitary Inspector. Applications are invited for the position of sanitary inspector with the Lennox and Addington County Health Unit. Minimum salary $2,000 with allowance for experience. Apply, stating qualifications, to Wilfred S. Wilson, Secretary, Lennox and Addington County Health Unit. P.O. Drawer 150, Napanee, Ontario.